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INDEX TO VOLUME XXI

Adhesions: Some Preventable Cause of, 81.
Adson, A. W., Surgery as a Therapeutic Agent in the Treatment of Neurologic Lesions, 312; Treatment of Brachial Plexus Injuries, 33.
Albuminuria, Orthostatic or Intermittent, and the Incident of Sagging Kidneys in Young Adults, 393.
Alkaptonuria, 397.
American Red Cross Child Welfare Program in Poland, 260.
Anderson, G. H., Alkaptonuria, 397.
Anderson, R. G., Dislocated Cervical Vertebrae, 212.
Anorectal Diseases, The Present Status of Local and Sacral Anesthesia in, 182.
Arthritis, 295.
Aspray, Joseph, The Roentgen Rays as an Aid in the Diagnosis of Disease of the Mastoids and Nasal Sinuses, 136.
Average Patient, The: A Study of One Thousand Consecutive Histories of Sick People, 18.

Baar, Gustave, Medical Treatment of Ulcer of the Stomach and Duodenum, 78.
Backache of Renal Origin, 12.
Barnett, E. J., Intrameningeal Hemorrhage of the New-Born, 243.
Behle, A. C., General Septic Peritonitis and its Treatment, 361.
Benzyl Benzoate in Cases of Bladder Distension, 17.
Biliary Drainage, Some Problems Involved in the Lyon-Meltzer Method of, 341.
Billings, Frank, Arthritis, 295; Present Day Problems of Medical Practice, 320.
Black, B. W., A Brief Analysis of the Cases Handled by the Salt Lake City Office of the United States Public Health Service During the Past Year, 179.
Bloodgood, J. C., Cancer of the Mouth, 280; Tumors of Bone, 308; Tumors of the Breast, 338.

Book Reviews:
Aaron: Diseases of the Digestive Organs, 230.
Abbott: The Principles of Physiology, 231.
Acute Epidemic Encephalitis, 32.
Antienrieth: Laboratory Manual for the Detection of Poisons and Powerful Drugs, 96.
Atkinson: A Treatise on Cataract, 29.
Atkinson: Lessons on Tuberculosis and Consumption, 96.
Bassler: Diseases of the Stomach and Upper Alimentary Tract, 268.
Berman: The Glands Regulating Personality, 162.
Booth: Radiant Energy and the Ophthalmic Lens, 422.
Brown: The Sympathetic Nervous System in Disease, 422.
Campbell: Surgical Anatomy, 29.

Carter: Nutrition and Clinical Dietetics, 392.
Cathell: The Physician Himself, 128.
Chetwood: The Practice of Urology, 29.
Collected Papers of the Mayo Clinic, 1920, 62; 1921, 231.
Crile: The Thyroid Gland, 232.
Cummer: A Manual of Clinical Laboratory Methods, 198.

Dayton: Practice of Medicine, 32.
DeLee: Obstetrics for Nurses, 392.
Dennett: The Healthy Baby, 456.
Dercum: An Essay on the Physiology of Mind, 422.
de Schweinitz: Diseases of the Eye, 130.
Dorland: American Illustrated Medical Dictionary, 96.
Drew: Individual Gymnastics, 422.
Einhorn, Lectures on Dietetics, 456.
Ewing: Neoplastic Diseases, 130.
Eyre: Physical and Mental Hygiene, 3 2.
Faught: Essentials of Laboratory Diagnosis, 96.
Fantus: Pharmacology and Therapeutics, 96.
Fisher: Ophthalmoscopy, Retinoscopy and Refraction, 456.
General Medicine, 456.
Gittings: Tuberculosis in Infancy and Childhood, 231.
Gross: The Blood Supply to the Heart in its Anatomical and Clinical Aspects, 12.
Grulee: Infant Feeding, 162.
Hackh: Chemical Reactions and Their Equations, 32.
Hare: A Text-Book of Practical Therapeutics, 231.
Hawes: Tuberculosis and the Community, 456.
Hertzler: Diseases of the Thyroid Gland, 390.
Hill: Practical Infant Feeding, 162.
Holt: Food, Health and Growth, 3 2
Howell: A Text-Book of Physiology, 230.
International Medical Annual, 390.
Kendall: Bacteriology, 268.
Lane: Nutrition and Specific Therapy, 270.
Lereboullet: The Endocrine Glands and the Sympathetic System, 454.
Macarthney: Mental Hospital Manual, 30.
MacCarthy: The Healthy Child from Two to Seven, 422.
MacKee: X-Ray and Radium in the Treatment of Diseases of the Skin, 420.
MacLean: Modern Methods in the Diagnosis of Renal Disease, 456.
Martin: South America from the Physician's Point of View, 64.
Mayo Foundation, Papers from, 162.
McCullum: The New Knowledge of Nutrition, 420.
Medical Clinics of North America, Vol V., No. 2, 32; Vol. V., No. 3, No. 4, 164; Vol. V., No. 5, No. 6, 270.
Mellish: The Writing of Medical Papers, 268.
Monyhan: The Spleen and Some of its Diseases, 64.
Morgan: Public Relief of Sickness, 456.
Morrey: The Fundamentals of Bacteriology, 64.
Morris: Human Anatomy, 29.
Myers: Practical Chemical Analysis of Blood, 64.
New and Nonofficial Remedies, 270.
Ortner: Abdominal Pain, 94.
Oxford Medicine: Vol. V., Vol. VI., 161.
Peters: Applied Chemistry, 3 2.
Peterson: Protein Therapy and Nonspecific Resistance, 12.
Pirquet: An Outline of the Pirquet System of Nutrition, 456.
Porter: Management of the Sick Infant, 198.
Pottenger: Clinical Tuberculosis, 130.
Ranson: The Anatomy of the Nervous
Robinson: The Life of Jacob Henle, 30.
Robinson: The Life of Jacob Heule, 30.
Roussy and Bertrand: Lessons in Pathological Histology, 454.
Saberton: Diathermy in Medical and Surgical Practice, 422.
Schachner: Ephraim McDowell, 30.
Schamberg: Diseases of the Skin and the Eruptive Fevers, 162.
Scheppegrell: Hay Fever and Asthma, 233.
Scott: Hughes' Practice of Medicine, 422.
Simpson: Radium Therapy, 232.
Stelwagon: Diseases of the Skin, 94.
Stevens: The Practice of Medicine, 267.
Stookey: Surgical and Mechanical Treament of Peripheral Nerves, 231.
Stout: The Eighteenth Amendment, 268.
Surgical Clinics of North America, Vol. I., No. 4, No. 5, 32; Vol. I., No. 6, Vol II., No. 1, 162; Vol. II., No. 4, 422.
Turner: Ringworm and its Successful Treatment, 64.
Van Biarcom: Obstetrical Nursing, 42
Worth: Squint, 29.
Young: A Text-Book of Gynecology, 3 2.

Booth, F. A., Cosmetic Surgery of the Face, Neck and Breast, 170.
Braasch, W. F., Atrophic Pyelonephritis, 1.
Brachial Plexus Injuries, Treatment of, 33.
Brooks, Harlow, The Abdominal Signs and Symptoms of Thoracic Disease, 371.
Budge, W. H., The Diagnosis of Surgical Kidney, 401.
Butler, John, Epidermophyton Infection of the Skin, 366.

Cancer of the Mouth, 280.
Cancer Patient for Operation, Preparation of the, 122.
Cannon, W. B., Nervous Control of the Thyroid Gland, 28 ; The Recent Evidence as to the Nature of Wound Shock, 350.
Carcinoma of the Liver, Primary, 253.
Carder, E. D., Infectious Diarrhea in Children, 247.
Cathey, G. A., Traumatic Neurosis, 375.
Cesarian Section in the Treatment of Eclampsia with Report of One Postmortem Delivery, 165.
Christian, H. A., Certain Phases of the Chronic Nephritis Problem, 272; Digitalis and Quinidine in the Treatment of Certain Types of Chronic Cardiac Disease, 331; Pernicious Anemia, Alkaptonuria, Hemolitic Jaundice, Orthostatic Albuminuria, 301.
Cleft Palate Surgery Technic, Some Considerations of, 52.
Colitis, Multiple Areas of Penetrating, 259.
Colon, Neuropathic Dilatation of, with Hypertrophy, 258.
Congdon, R. T., Congenital Absence of Both Tibiae, 214.
Cosmetic Surgery of the Face, Neck and Breast, 170.

Dental Infections from a Medical Point of View, 150.
Diabetic Treatment, The Problems of Modern, 47.
Diarrhea in Children, Infections, 247.
Digitalis and Quinidine in the Treatment of Certain Types of Chronic Cardiac Disease, 331.
Dislocated Cervical Vertebrae, 212.
Dislocation of the Knee, 213.
Ductless Glands, Diagnosis of Disorders of the, 348.
Dunn, A. D., Some Problems Involved in the Lyon-Meltzer Method of Biliary Drainage, 341.
Dwyer, M. F., A Roentgenologic Review of 750 Gastrointestinal Examinations, 70.

Editorials:
- Best Diet for the Diabetic, 25.
- Justice for the Reserve Corps of the United States Public Health Service, 25.
- The Public and the Physician, 26.
- Meeting of the Pacific Northwest Medical Association of Spokane, 26.
- Pacific Coast Association of Anesthetists, 27.

  New Advertisements, 27, 59, 126, 159, 271, 412.
  Diphtheria to be Abolished, 58.
  Pacific Northwest Medical Association, 58.
  The St. Louis Meeting of the A. M. A., 58.
  Lowest Infant Mortality, 59.
  Publicity for Public Health Problems, 88.
  The Medical Courtmartial of Dr. N. E. Wayson, 88.
  Interesting if True, 89.
  Notable Heart Lectures, 90.
  Arrangements for the July Spokane Meeting, 90.
  A Metabolic Journal, 90.
  The Physician and the Optometrist, 124.
  The University of Washington Extension Course, 124.
  Pacific Northwest Medical Association, 125.
  The Sir Thomas Lewis Lectures, 126.
  Bunk in Medical Practice, 157.
  The Vanishing Family Doctor, 157.
  Lethargic Encephalitis Statistics, 158.
  Graduate Medical Lectures, 158.
  Entertainment for the A.M.A. Meeting at St. Louis, 158.
  Pacific Coast Oto-Ophthalmological Society, 159.
  The Surgeon as an Internist, 192.
  Progress in Essential Hypertension, 192.
  Pacific Northwest Medical Association, 193.
  Washington State Society Meeting, 194.
  University of Washington Medical Lectures, 194.
  The St. Louis A.M.A. Meeting, 194.
  Riverton Sanatorium, 194.
  The Nature of Fever, 225.
  The Present Conception of Nephritis, 225.
  Aid for Russian Physicians, 226.
  The Pacific Northwest Medical Association Meeting, 227.
  Montana State Medical Meeting, 229.
  Activities of the American Medical Association, 262.
  German Drug Monopoly, 262.
  Washington Association Meeting in Tacoma, 263.
  Utah Association Meeting, 264.
  Oregon State Meeting, 265.
  Idaho State Meeting, 265.
  Enlarged Issue for the Spokane Meeting, 265.
  Pacific Northwest Medical Association Number, 271.
  A Satisfactory Medical Meeting, 380.
  Physicians Enter Politics, 381.
  Oregon Association Meeting, 382.
  Epinephrin and Muscular Exercise, 410.
  Infant Mortality Rate, 411.
  Cancer Week, 411.
  The Oregon State Association and Health Exposition, 411.
  Financing the State Association, 438.
  Legislation by Election, 438.
  Abolish Smallpox Quarantine, 439.
  Lectures on Endicronology, 439.
  Infectious Jaundice, 439.

Else, J. E., The Value to the Surgeon of the Basal Metabolic Rate in Toxic Goiter. 108.
Engelbach, William, Diagnosis of Disorders of the Ductless Glands, 348.
Epidemic Encephalitis, Epidemic Hiccup, Spasmodic Torticollis, and Allied Condition. Experimental Studies in the Etiology of, 329.
Epidermophyton Infection of the Skin, 366.

Flood, T. A., The Relationship Between the Clinical Laboratory and the Physician, 433.
Focal Infections from the Dentists' Standpoint, 21.
Fractures and Dislocations of the Spine with Report of Five Cases, 206.

Gallbladder Diagnosis, Barium Meal Study in, 172.
Gallbladder, New Surgical Drainage of the, 79.
Gastrointestinal Examinations, A Roentgenologic Review of 750, 70.
Gibson, T. C., New Surgical Drainage of the Gallbladder, 79.
Goetsch, Emil, The Pathologic Diagnosis and Surgical Treatment of Goiter, 97.
Goiter, Surgical Considerations of, 324.
Goiter, Technic of Operation for, o Improve Postoperative Cosmetics, 104.
Goiter, The Pathologic Diagnosis and Surgical Treatment of, 97.
Goiter, The Value to the Surgeon of the Basal Metabolic Rate in Toxic, 108.
Gonorrhea in the Female with Experimental Studies, Antiseptic Dye Treatment of, 182.

Hain, R. F., Extrarenal and Ureteral Pathology Causing Renal Symptoms in the Presence of a Negative Urine, 399.
Harvey, William, and His Discovery. 23.
Health Supervision in School Children, 44.
Hedblom, C. A., Graded Extrapleural Thorocaplasty in Chronic Pulmonary Suppuration with Special Reference to Diffuse Bronchiectasis, 423.
Hernia, Diaphragmatic, 65.
Hinman, Frank, Suprapubic versus Perineal Prostatectomy, 5.
Hip Joint in Children, Diseases of the, 250.
Hirschfelder, A. D., Some Newer Tendencies in Therapeutics, 35.
Hirschman, L. J., The Present Status of Local and Sacral Anesthesia in Anorectal Diseases, 282.
Hunt, John, Technic of Operation for Goiter to Improve Postoperative Cosmetics, 104.

Intrameningeal Hemorrhage of the New-Born, 243.

Janney, N. W., The Problems of Modern Diabetic Treatment, 47.
Johanson, N. A., Treatment of Postoperative Complications, 221.
Jones, A. C., Report of Radium Cases of Head and Neck, 140.
Jones, W. R., Antiseptic Dye Treatment of Gonorrhea in the Female with Experimental Studies, 182.
Kalb, G. B., Personal Experience with Artificial Pneumothorax, 425.
Kallen, Lincoln, Barium Meal Study in Gallbladder Diagnosis, 172.
Karshner, W. M., What is the Matter with the Practice of Medicine, 85.
Knight, C. P., Health Supervision of School Children, 44.
Labor, Painless, 189.
Laboratory and the Physician, The Relationship Between the Clinical, 433.
Lane, J. L., X-Ray versus Surgery in the Treatment of Fibroid Tumors of the Uterus, 241.
Laubaugh, E. E., Report on Medical Legislation in Idaho, 83.
Logsdon, R. E., Medical Problems and Foreign Trade, 379.

Manning. J. B., American Red Cross Child Welfare Program in Poland, 260.
Matthews, A. A., Gastric and Duodenal Ulcer, 74.
Matson. R. C., Diagnostic Problems in Pulmonary Tuberculosis, 185, 199.
Matson. R. W., Notes on a Year in Europe, 116.
Mayo, W. J., Myomectomy for Myomas of the Uterus, 83.
McNerthney, J. B., Helpful Technic for Operations on the Thyroid Gland, 189.
Meadows, L. H., Dislocation of the Knee, 213.
Medical Curriculum. Unity in the, 49.
Medical Legislation in Idaho, Report on, 83.
Medical Notes, 27. 59, 90, 126, 159, 195, 265, 383, 412, 440.
Medical Practice, Present Day Problems of, 320.
Medical Problems and Foreign Trade, 379.
Medical Profession, Only One, 377.
Menzies, C. S., Tuberculosis of the Ileocecal Region with Special Reference to the Cecum, 406.
Millwee, R. H., High Voltage in X-Ray Therapy, 238.

Nephritis Problem, Certain Phases of the Chronic, 272.
Neurologic Lesions, Surgery as a Therapeutic Agent in the Treatment of, 312.
Notes on a Year in Europe, 116.

Obituaries:
  Bacon, C. T., 61.
  Bonney, V. C., 92.
  Boyle, F. M., 441.
  Brown, Warren, 440.
  Chalmers, J. M. P., 160.
  Dulin, C. F., 61.
  Figgins, D. W., 414.
  Foreman, A. L., 29.
  Fried, Marcus, 29.
  Gleason, H. M., 414.
  Green, Henry, 266.
  Griswold, John, 384.
  Gulick, W. V., 91.
  Heg, E. E., 384.
  Hill, E. W., 28.
  Hotchkiss, I. S., 61.
  Hustis, J. H., 28.
  Hyde, G. E., 267.
  Johnson, Christian, 61.
  Jordan, J. E., 127.
  Klecan, C. J., 414.
  MacDonald B. J., 92.
  Martin, H. S., 28.
  Miller, J. M., 28.
  Newlands, George, 196.
  Noth, R. F., 441.
  Oechsli. A. B., 384.
  Richardson, J. R., 61.
  Shayley, W. F., 92.
  Sherrick, J. D., 28.
  Sizer, E. A., 29.
  Smith, D. L., 28.
  Stafrin. Christian, 267.
  Starbuck, S. H., 414.
  Stewart, W. W., 441.
  Sullivan, O. N., 267.
  Taylor, F. C., 61.
  Trommald. G. T., 160.
  Walker, R., 28.
  Walls, J. T., 61.
  Whiteaker, J. C., 384.
  Wooley, H. W., 61.

Pacific Northwest Medical Association, Constitution and By-Laws of, 357.
Pacific Northwest Medical Association, Minutes of Scientific Session of, 355.
Palmer, L. J., The Average Patient. A Study of One Thousand Consecutive Histories of Sick People, 18.
Peacock, A. H., Backache of Renal Origin, 12: Orthostatic or Intermittent Albuminuria and the Incident of Sagging Kidneys in Young Adults, 333.
Peritonitis and its Treatment, General Septic, 361.
Pernicious Anemia. Alkaptonuria, Hemolytic Jaundice, Orthostatic Albuminuria, 301.
Pettit, J. A., Some Considerations of Cleft Palate Surgical Technic. 52.
Pneumothorax, Personal Experience with Artificial, 425.
Postoperative Complications, Treatment of, 221.
Pottenger, F. M., General Medical Men Can and Must Make a Diagnosis of Tuberculosis if Satisfactory Results in Treatment are to be Obtained, 315.
Practice of Medicine. What is the Matter with the, 85.
Prostatectomy, Principles of, 9.
Prostatectomy, Suprapubic versus Perineal, 5.
Pupil in Health and Disease, The, 154.
Pyelonephritis, Atrophic, 1.

Quinidine in Auricular Fibrillation, 191.
Quigley, D. T., Preparation of the Cancer Patient for Operation, 122.

Radium Cases of Head and Neck, Report of, 140.
Radium Therapy, Modification of the Indications for Operative Interference in Gynecology Imposed by Present Day, 131.
Renal Function Tests, 220.
Renal Symptoms in the Presence of a Negative Urine, Extrarenal and Ureteral Pathology Causing, 399.

112147 JUL 9 - 1923

Rockey, A. E., Principles of Prostatectomy, 9.
Rockey, Paul, Myxomatous Degeneration of Myofibroma of Uterus, 239.
Roentgen Rays as an Aid in the Diagnosis of the Mastoid and Nasal Sinuses, 136.
Rosenow, E. C., Experimental Studies in the Etiology of Epidemic Encephalitis, Epidemic Hiccup, Spasmodic Torticollis and Allied Conditions, 329.
Rowntree, E. C., Renal Function Tests, 220.

Salt Lake City Office of the United States Public Health Service During the Past Year, A Brief Analysis of the Cases Handled by the, 179.
Sawins, A. H., Only One Medical Profession, 377.
Scott, J. F., Multiple Areas of Penetrating Colitis, 259.
Shaw, L. F., Focal Infection from the Dentist's Standpoint, 21.
Shock, The Recent Evidence as to the Nature of Wound, 350.
Skeel, R. E., Modification of the Indications for Operative Interference in Gynecology Imposed by Present Day Radium Therapy, 131.
Smith, C. A., Painless Labor, 189.

Society Meetings, Reports of:
  Idaho State Medical Association, 92.
  King County Medical Society, 196.
  Oregon State Medical Association, 441.
  Pacific Northwest Medical Association, 355.
  Portland City and County Medical Society, 160.
  Seattle Surgical Society, 127.
  Utah State Medical Association, 414, 448.
  Washington State Medical Association, 384.
Sprague, C. H., Dental Infections from a Medical Point of View, 150.
Stater, W. J., Benzyl Benzoate in Cases of Bladder Distension, 17.
Sterility Due to Salpingitis, A Preliminary Report on the Surgical Prevention of, 168.
Sternberg, J. D., Subnhrenic Abscess, 217.
Strohm, J. G., Remarks on Urol and Syphilis, 55.
St. Sure, Frank, Teeth and Tonsils as a Source of Disease, 146.
Subphrenic Abscess, 217.
Surgical Kidney, The Diagnosis of, 401.

Teeth and Tonsils as a Source of Disease, 146.
Terry, W. I., Surgical Consideration of Goiter, 324.
Testicular Grafting in Man, Heterogenous, with Histologic Proof of the Taking of the Graft, 256.
Therapeutics, Some Newer Tendencies in, 39.
Thoracic Disease, The Abdominal Signs and Symptoms of, 371.
Thorek, Max, Heterogenous Testicular Grafting in Man, with Histologic Proof of the Taking of the Graft, 256.
Thyroid Gland, Helpful Technic for Operations on the, 189.
Thyroid Gland, Nervous Control of the, 289.
Thorocoplasty in Chronic Pulmonary Suppuration with Special Reference to Diffuse Bronchiectasis, Graded Extrapleural, 423.
Tibiae, Congenital Absence of Both, 214.
Tonsillectomy, Indications and Contraindications for, from an Internist's Point of View, 143.
Torland, Torlief, Primary Carcinoma of the Liver, 253.
Torrey, H. B., Unity in the Medical Curriculum, 49.
Traumatic Neurosis, 375.
Tuberculosis, Diagnostic Problems in Pulmonary, 185, 199.
Tuberculosis, General Medical Men Can and Must Make a Diagnosis of, if Satisfactory Results in Treatment are to be Obtained, 315.
Tuberculosis of the Ileocecal Region with Special Reference to the Cecum, 406.
Tumors of Bone, 308.
Tumors of the Breast, 338.
Tyree, J. E., Diseases of the Hip Joint in Children, 250.
Ulcer, Gastric and Duodenal, 74.
Ulcer of the Stomach and Duodenum, Medical Treatment of, 78.
Urology and Syphilis, Remarks on, 55.
Uterus, Myomectomy for Myomas of the, 235.
Uterus, Myxomatous Degeneration of Myofibroma of, 239.
Uterus, X-Ray versus Surgery in the Treatment of Fibroid Tumors of the, 24.

Vickers, D. M., Benzyl Benzoate in Cases of Bladder Distension, 17.
Viets, Henry, William Harvey and His Discovery, 23.

Wade, B. N., Diaphragmatic Hernia, 65.
Watson, W. H., Subphrenic Abscess, 217.
Wheeler, H. E., Cesarean Section in the Treatment of Eclampsia with Report of One Postmortem Delivery, 165.
Willard, H. S., Fractures and Dislocations of the Spine with the Report of Five Cases, 206.
Willis, P. W., Some Preventable Causes of Adhesions, 81.
Winslow, Kenelm, Indications and Contraindications for Tonsillectomy from an Internist's Point of View, 143; Neuropathic Dilatation of the Colon with Hypertrophy, 258; Quinidine in Auricular Fibrillation, 191.
Wurdemann, H. V., The Pupil in Health and Disease, 154.
Ziegelman, E. F., A Preliminary Report on the Surgical Prevention of Sterility Due to Salpingitis, 168.
X-Ray Therapy, High Voltage, 2[illegible]8.

CONTRIBUTORS TO VOLUME XXI

Adson, Alfred, Rochester, Minn., 33, 312.
Anderson, G. H., Spokane, Wash., 379.
Anderson, Roger, Tacoma, Wash., 212.
Aspray, Joseph, Spokane, Wash., 136.

Baar, Gustave, Portland, Ore., 78.
Barnett, E. J., Spokane, Wash., 243.
Behle, A. C., Salt Lake City, Utah, 361.
Billings, Frank, Chicago, Ill., 295, 320.
Black, B. W., Salt Lake City, Utah, 179.
Bloodgood, J. C., Baltimore, Md., 280, 308, 338.
Booth, F. A., Seattle, Wash. 170.
Braasch, W. F., Rochester, Minn., 1.
Brooks, Harlow, New York City, 371.
Budge, W. H., Logan, Utah, 401.
Butler, John, Minneapolis, Minn., 366.

Cannon, W. B., Boston, Mass., 289, 350.
Carder, E. D., Vancouver, B.C., 247.
Cathey, G. A., Portland, Ore., 375.
Christian, H. A., Boston, Mass., 272, 301, 331.
Congdon, R. T., Wenatchee, Wash., 214.

Dunn, A. D., Omaha, Neb., 341.
Dwyer, M. F., Seattle, Wash., 70.

Else, J. E., Portland, Ore., 108.
Engelbach, William, St. Louis, Mo., 348.

Flood, T. A., Salt Lake City, Utah, 433.

Gibson, T. C., Salt Lake City, Utah, 79.
Goetsch, Emil, Brooklyn, N.Y., 97.
Hain, R. F., Seattle, Wash., 339.
Hedblom, C. A., Rochester, Minn., 423.
Hinman, Frank, San Francisco, Calif., 5.
Hirschfelder, A. D., Minneapolis, Minn., 39.
Hirschman, L. J., Detroit, Mich., 282.
Hunt, John, Seattle, Wash., 104.

Janney, N. W., Los Angeles, Calif., 47.
Johanson, N. A., Seattle, Wash., 221.
Jones, A. C., Boise, Ida., 140.
Jones, W. R., Seattle, Wash., 182.

Kalb, G. B., Monrovia, Calif., 429.
Kallen, Lincoln, Medford, Ore., 172.
Karschner, W. M., Puyallup, Wash., 85.
Knight, C. P., Salt Lake City, Utah, 44.

Lane, J. L., Seattle, Wash., 241.
Laubaugh, E. E., Boise, Ida., 83.
Logsdon, R. E., Portland, Ore., 379.

Manning, J. B., Seattle, Wash., 260.
Matson, R. C., Portland, Ore., 185, 199.
Matson, R. W., Portland, Ore., 116.
Matthews, A. A., Spokane, Wash., 74.
Mayo, W. J., Rochester, Minn., 235.
Meadows, L. H., Clear Lake, Wash., 213.
Menzies, C. S., Portland, Ore., 406.
Millwee, R. H., Dallas, Texas, 2[illegible]8.

Palmer, L. J., Seattle, Wash., 18.
Peacock, A. H., Seattle, Wash., 12, 3[illegible]3.
Pettit, J. A., Portland, Ore., 52.
Pottenger, F. M., Monrovia, Calif., 315.
Quigley, D. T., Omaha, Neb., 122.

Rockey, A. E., Portland, Ore., 9.
Rockey, Paul, Portland, Ore., 239.
Rosenow, E. C., Rochester, Minn., 329.
Rowntree, L. G., Rochester, Minn., 220.

Sawins, A. H., Spokane, Wash., 377.
Scott, J. F., Spokane, Wash., 259.
Shaw L. F., Pocatello, Ida., 21.
Skeel, R. E., Los Angeles, Calif., 131.
Smith, C. A., Seattle, Wash., 189.
Sprague, C. H., Pocatello, Ida., 150.
Stater, W. J., Boston, Mass., 17.
Sternberg, J. D., Portland, Ore., 217.
Strohm, J. E., Portland, Ore., 55.
St. Sure, Frank, Colfax, Wash., 146.

Terry, W. I., San Francisco, Calif., 324.
Thorek, Max, Chicago, Ill., 256.
Torland, Torlief, Seattle, Wash., 253.
Torrey, H. B., Portland, Ore., 49.
Tyree, J. E., Salt Lake City, Utah, 250.

Vickers, D. M., Boston, Mass., 17.
Viets, Henry, Boston, Mass., 23.

Wade, B. N., Portland, Ore., 65.
Watson, W. H., Portland, Ore., 217.
Wheeler, H. E., Spokane, Wash., 165.
Willard, H. S., Tacoma, Wash., 206.
Willis, P. W., Seattle, Wash., 81.
Winslow, Kenelm, Seattle, Wash., 143, 191, 258.
Wurdemann, H. V., Seattle, Wash., 154.

Ziegelman, E. F., Portland, Ore., 168.

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ORIGINAL CONTRIBUTIONS

ATROPHIC PYELONEPHRITIS*

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The type of chronic renal infection most frequently observed is bilateral pyelonephritis. The usual clinical course of this condition is a progressive chronic urinary infection with continuous frequent micturition, dysuria, and a moderate degree of intermittent pain referred to either renal area. Altho doubtlessly in a large number of patients the condition eventually disappears, it usually persists and the patient succumbs after many years with symptoms of terminal renal insufficiency. At necropsy the kidneys are found to be somewhat smaller than normal and characteristic pathologically of interstitial nephritis and to have many areas of round-cell infiltration and a slight degree of dilatation of the renal pelvis and ureter.

Pyelonephritis is as a rule not regarded as a surgical disease of the kidney for two reasons; (1) acute infections usually resolve spontaneously and (2) chronic infections are almost always bilateral and respond in greater or lesser degree to medical treatment. Unilateral pyelonephritis, which does not respond to medical treatment, becomes a surgical condition and usually demands nephrectomy. The several forms of pyelonephritis which may be considered surgical are unilateral acute septic pyelonephritis, pyonephrosis, and atrophic pyelonephritis. I shall discuss the latter condition in this paper.

Atrophic pyelonephritis is distinguishable from chronic bilateral pyelonephritis from both clinical and pathologic points of view. The urinary symptoms are less severe and are usually not progressive; the pain is unilateral and may be more severe, and is frequently accompanied by evidences of acute renal infection.

Usually but one kidney is affected and, when removed, it is found to be greatly reduced in size. The atrophy may be confined largely to one-half of the kidney. On section marked cicatricial changes are apparent. There is frequently a well marked dilatation of the renal pelvis, altho to a much less degree than that found with primary hydronephrosis.

Twenty-eight patients have been observed at the Mayo Clinic, on whom a diagnosis of unilateral atrophic pyelonephritis was made; twenty-two were operated on. In contrast to bilateral pyelonephritis, which predominates markedly in the male, it was found to occur in seventeen female patients and eleven male patients. The onset of symptoms appeared in the fourth decade in twenty-two

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*Read before the Forty-Seventh Annual Meeting of Oregon State Medical Association and Fifth Tri-State meeting, Portland, Ore., June 30-July 2, 1921.

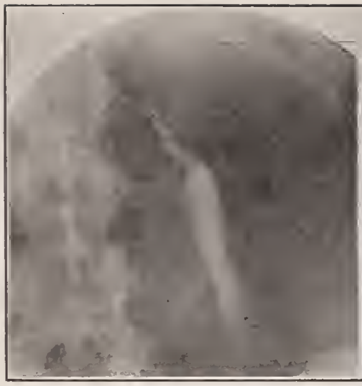

Fig. 1.

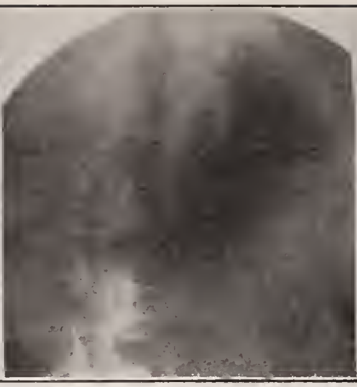

Fig. 2.

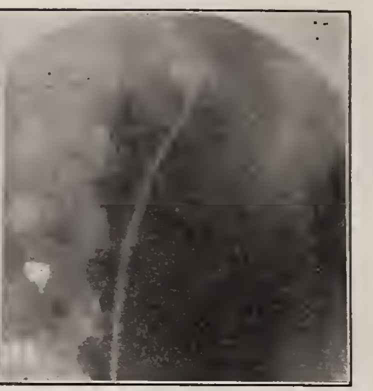

Fig. 3.

Fig. 1. Case 282396. Pelvis and calices obliterated by atrophic changes.
Fig. 2. Case 235566. Reduction in size of calices and pelvis as result of chronic atrophic pyelonephritis.
Fig. 3. Case 223011. Atrophic pelvis. Calices practically obliterated.

patients (80 per cent). The average age was thirty-eight years. The average duration of symptoms was six years and four months.

CLINICAL DATA

Symptoms. Unilateral pain referred to the kidney area is probably the most common subjective symptom. The pain is described either as a dull ache persisting for a short period, or appearing in acute attacks. It was present in twenty-six patients. It was described as acute in ten patients, and dull and prolonged in sixteen. It was referred largely to the renal area in seventeen patients and to the upper abdomen in five. The pain, in several patients, did not appear until after vesical symptoms had persisted over a period of many years. Frequent micturition and dysuria, the usual symptoms, were present in twenty-five patients. Altho these symptoms were persistent with the majority of patients, with several they had become dormant at the time of examination; with others they recurred at intervals. Hematuria of slight degree and evidently of vesical origin occurred in five patients. Definite attacks of fever and chills and other evidence of acute renal infection recurring at irregular intervals were present in eight patients.

Physical Examination. The general physical examination is usually negative, except, of course, during the acute attacks. In two cases a fistula persisted from previous drainage of the kidney. In one case there was evidence of a recent perinephritic abscess. Urinalysis for twenty-five patients demonstrated the presence of pus cells; the urine of three was negative. In the majority of cases the amount of pus was only moderate. The total renal functional tests were normal in every case. Coincident infection in other organs was noted in several cases. Foci of infection, such as dental sepsis and infected tonsils, were found in practically all patients in whom they were searched for.

The importance of primary foci of infection such as may exist in the teeth or tonsils has recently been emphasized by the experiments of Bumpus and Meisser.* A careful search should therefore be made in order to safeguard the remaining kidney, and if any focus exists it should be removed.

CYSTOSCOPIC DATA

The Diagnosis of atrophic pyelonephritis is best established by means of cystoscopic data. In this condition, in contrast to bilateral pyelonephritis, the bladder is usually found on cystoscopy to be involved only to a moderate extent, or not at all. It is not unusual to find evidence of more or less chronic infection around one meatus, altho in some cases it may appear quite normal. Evidence of diminished renal function may often be inferred from the occasional feeble spurt of urine, as compared with hypersecretion from the normal side. The urine from the affected meatus may be turbid, altho in some instances it is fairly clear. The ureteral catheter rarely meets with any obstruction in its course to the renal pelvis, where there may be a slight amount of residual urine. The rate of secretion from the atrophic kidney may be perceptibly less than that on the normal side. The urine catheterized from the affected kidney usually contains only a moderate number of pus cells and occasionally none. The urine from the opposite kidney was found to be normal in all but one patient, in whose urine a moderate number of pus cells was found.

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* Bumpus, H. C. and Meisser, J. G.: Focal infection and selective localization of streptococci in pyelonephritis. Arch. Int. Med., 1921, xxvii, 326-337.

The differential renal functional test probably offers the data of greatest clinical significance. The phenolsulphonephthalein return from the affected kidney is markedly less than normal, often only a faint trace, while from the normal kidney there is evidence of hypertrophied secretion. The contrast afforded by the marked unilateral diminution in renal function and the slight evidence of infection are the clinical data which might be regarded as pathognomonic of atrophic pyelonephritis (fig. 1).

The pyelogram also offers data which are often suggestive of atrophic pyelonephritis. As might be expected from the condition, the outline of the renal pelvis and calyces is frequently much smaller than normal. When, however, there is a secondary dilatation of the renal pelvis and of the ureter, the evidence of atrophy may become effaced. Dilatation of the ureter is occasionally noted, together with a contracted pelvic outline. In only a few cases was the outline of the pelvis in the pyelogram regarded as normal (fig. 2).

DIFFERENTIAL DIAGNOSIS

Atrophic pyelonephritis may be most easily confused with (1) reduplication of the renal pelvis, (2) wide stricture of the lower ureter, and (3) chronic renal tuberculosis.

Pelvic Reduplication. It has been demonstrated that the upper pelvis, with reduplication of the renal pelves, is usually about one-half the size of the lower pelvis. On cystoscopic examination it is very easy to overlook the second meatus, and, if the inner ureter leading to the upper pelvis is catheterized, the resulting pyelogram will demonstrate the outline of the small upper pelvis, which could easily be mistaken for an atrophic kidney (fig. 3).

Stricture of the Ureter. With a wide stricture of the lower ureter there may be resulting atrophy of the kidney, accompanied by a moderate degree of dilatation of the ureter and pelvis. The ureteral catheter may not meet with obstruction, and slight dilatation visible in the pyeloureterogram may be regarded as secondary.

Renal Tuberculosis. Renal tuberculosis of a chronic cicatricial type may have an insidious development, lacking any of the clinical data which are usually observed. The process then has a tendency to encapsulate; it slowly encroaches on the adjacent renal tissue, so that the kidney gradually atrophies and becomes largely cicatricial. The cystoscopic examination usually discloses evidence suggestive of tuberculosis, altho the findings may make it indistinguishable from atrophic pyelonephritis. The demonstration of tuberculosis bacilli in the urine will of course identify the lesion. In one case the clinical course and the gross pathology of the kidney removed were those of atrophic pyelonephritis, and it was only on microscopic examination of the rental tissue that the tuberculosis was discovered.

Bilateral Pyelonephritis. Occasionally a patient is observed with a definite chronic bilateral pyelonephritis, with function of one kidney practically normal and that of the other greatly reduced. As a rule, however, the function of both kidneys is reduced symmetrically and surgical treatment is contraindicated. If chronic infection is found in both kidneys and one kidney has become atrophic, the latter should be removed, providing the function of the other kidney is normal or shows evidence of hypertrophy (fig. 4).

PATHOLOGY

The kidneys in this series of cases were small, averaging 58 gm. in weight, and from 3 cm. to 5 cm. in their greatest diameter. They were firm and contracted, of much the same consistency as the fibrosed kidneys in arteriosclerosis. The outer surface is usually smooth and rounded instead of deeply scarred and granulated as in chronic nephritis. The capsule is thickened and strips easily. One-half of the kidney may be involved more than the other, and in several cases the infection was apparently confined entirely to one pole, with hypertrophy of the tissue in the remaining portion of the kidney. In one patient a double kidney was found with complete reduplication of the pelves and ureters. The atrophic pyelonephritis was confined entirely to the upper half, the

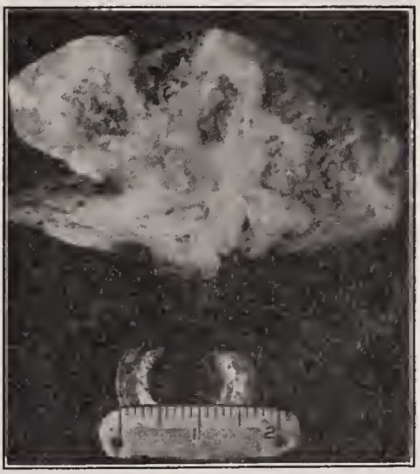
Fig. 4. Case 216837. Atrophic pyelonephritis with almost complete fibrosis of kidney and kidney pelvis.

lower half being quite normal. A deposit of fat is sometimes found surrounding the renal pelvis, which is evidently the result of chronic perinephritis.

The tissues lining the kidney pelvis were greatly thickened, contracted and granular, often showing irregular folds as tho shrunken to occupy a smaller space. In a few kidneys the pelvis showed evidence of a slight dilatation, altho in the majority it had a capacity of only a few cubic centimeters. The ureters are generally thickened and dilated, especially in the upper third, and the ureteropelvic juncture may be moderately occluded. On section irregular areas of condensed and fibrous tissue are seen. The cortex of the kidney in most cases is much thinner than normal, at times being only 2 to 3 mm. in depth. Occasionally the fibrosis and destruction of kidney substance were so marked that it was impossible to find the dividing line between the medulla and the cortex. Bands of fibrous tissue and thick walled blood vessels could be made out readily on the cut surface. Occasionally inflammatory cystic degeneration was found, especially in areas in which cicatricial changes were marked (fig. 5).

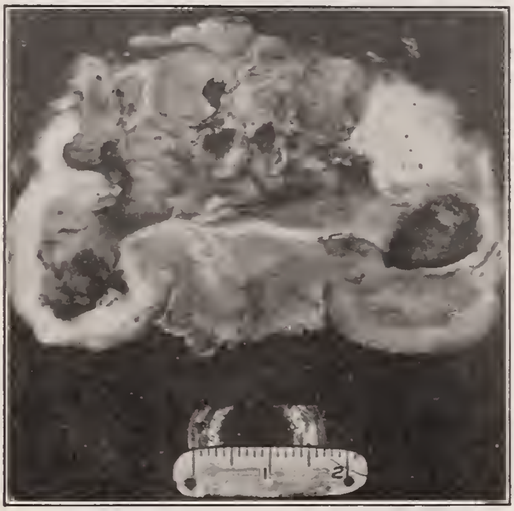

Fig. 5. Case 298617. Atrophic pyelonephritis with destruction and fibrosis of most of the kidney substance.

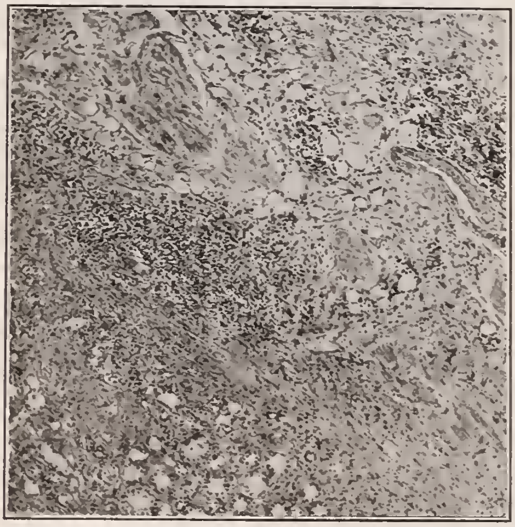

Fig. 6. Case 142332. Atrophy and fibrosis with marked round cell infiltration.

The microscopic examination showed a generalized atrophy of most of the functionating renal tissues, together with a marked increase in the connective tissue elements. There were marked thickening and sclerosis of practically all the blood vessels. The intima especially was so thickened that at times it completely occluded the lumen of the vessel (fig. 6).

The tubules in most cases showed a general atrophy; at times there was a decrease in the number or even a complete absence in certain areas. The epithelial cells lining the tubules were flat and compressed. In some sections dilated lumina were found filled with pink staining colloid material, possibly the altered obstructed secretion of the tubular epithelium. Occasionally areas of normal or even hypertrophied tubules and glomeruli were found in close opposition to fields of complete fibrosis. Often areas of atrophied tubules with an excessive number of glomeruli were compressed together in the meshes of interlacing bands of fibrous tissue. This grouping of the glomeruli shows a generalized atrophy of the interstitial elements. The glomeruli, at times merely small areas, often formed the center of a thick fibrous nodule. In one case a large hyaline mass was found, in the center of which was an extensive area of calcareous degeneration. Infiltration of small round cells was found in all sections. These cells, mononuclear lymphocytes and plasma cells, in some cases were quite extensively distributed; in others they were clumped and grouped, especially around hyalinized and fibrosed areas.

ETIOLOGY

The etiology offers a very interesting problem. It is quite evident that the condition is not the end result of the usual pyelonephritis. It can hardly be explained by primary stricture of the ureter with hydronephrosis and secondary atrophy, since the dilatation of the pelvis is not great enough to cause atrophy, and, furthermore, the atrophy is not symmetric, but is frequently confined to one portion of the kidney. The possibility of a primary stricture of the ureter, with diffuse acute infection in the renal cortex and consequent atrophy, before the hydronephrotic sac is developed, may be considered. In cases of operations for perinephritic abscess or drainage of surgical kidneys it is possible that the renal atrophy was secondary, rather than primary.

It seems more probable that the atrophic condition is the result of primary septic infarct. This is further borne out by the fact that the atrophy is at times confined to one portion of the kidney. The secondary dilatation of the pelvis and ureter may be explained either by a secondary stricture of the lower ureter or by an inflammatory atonic dilatation is the result of a primary septic infarct. This that no evidence of ureteral obstruction is encountered, even by catheters of large caliber introduced into the dilated ureter.

RESULTS OF OPERATION

At operation it is often difficult to find the diseased kidney, since it is often displaced and covered with fibrous tissue as a result of accompanying perinephritis. The kidney may be only 3 to 5 cm. in diameter and is easily overlooked. Altho the small amount of tissue removed is out of proportion to the severity of the patient's symptoms, nevertheless such symptoms disappear following removal of the kidney.

The results of operation for atrophic pyelonephritis have been very satisfactory. Improvement or cessation of vesical symptoms and improvement of the general condition have been accomplished for practically every patient.

Only three patients reported that evidence of urinary infection persisted, and only one of these claimed that there was no improvement. One patient was reported as having died from cause unknown three months after operation.

SUPRAPUBIC VERSUS PERINEAL PROSTATECTOMY*

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There are two conditions that stand above all others in the surgical treatment of enlarged prostate. The first is that the patient shall survive the operation, and the second that he shall be permanently cured by it. They constitute distinct problems, one clinical, the other urologic; but with this relation, that the mortality result on the one hand and the functional cure on the other are each closely dependent on surgical efficiency. Good surgery is more essential to a urologic than a clinical cure, especially with perineal prostatectomy.

It is particularly with the relation of surgery to the urologic problem of prostatic hyperplasia that the present paper is concerned. Neglect of this relationship has discredited both methods, perineal to a greater and suprapubic to a lesser degree. Knowledge of the pathology in relation to the surgical anatomy and the structural results attained emphasizes the respective advantages and disadvantages of the suprapubic and perineal routes. It is not our purpose to champion or discredit either operation. With certain reservations they are both good.

THE PROBLEM OF SURGICAL RISK OR MORTALITY

The clinical problem has been thoroly investigated. Age is recognized as no contraindication. But certain physical abnormalities, that may be grouped as cardiac, renal, cardiorenal, infectious, anemic, diabetic, etc., constitute distinct risks to surgery. But these clinical risks are insignificant in comparison to the risk of operation without preparation by preliminary urinary drainage. The importance of catheter preparation is a distinct contribution of the urologist and is now universally recognized as a factor of even greater significance than operative skill in reducing the surgical mortality of prostatectomy.

Thomas, of Philadelphia, who has recently summarized mortality results with respect to these two factors, says: "The mortality of operators with special skill in the performance of the operation (and who properly prepare their cases) lies between three and five per cent; the mortality of operators of average skill, when great care is taken in the preoperative examination and treatment of patients, usually lies between five and ten per cent, while, when these precautions are not taken, the same man would usually have a mortality of over ten to twenty per cent."

This is generally true, but a third factor in reducing mortality has lately been brought forward for suprapubic prostatectomy by the practice of a two-stage operation. The success of preliminary cystotomy would seem to depend largely on the particular purpose for it in the mind of the operator at the time of its performance. If used routinely as a substitute for catheter preparation, it cannot be too strongly condemned. Such practice, to be sure, will reduce the surgeon's mortality figures but at the expense of killing off most of his poor clinical risks; for the patients who survive cystotomy then have every chance of successfully undergoing prostatectomy. This fact does not justify the procedure, nor do the men who recommend it publish the fatalities following the first stage.

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*Read before the Forty-Seventh Annual Meeting of Oregon State Medical Association and Fifth Tri-State meeting, Portland, Ore., June 30-July 2, 1921.

Infrequently cystotomy drainage is unavoidable in the beginning of preparation because of our inability to use catheter preparation on account of vesical irritability, stones, tumor or hemorrhage, or on account of urethral strictures. We have encountered these indications eight times in 140 cases with two fatalities following cystotomy, an incidence of 0.5 per cent for indication, a mortality of 25 per cent for cystotomy. The eight cases, as evidenced by the necessity of suprapubic drainage, were all in advanced prostatism with pronounced urinary infections, and four had large bladder stones. We do not mean to infer that routine cystotomy would give 25 per cent mortality. We do believe that cystotomy is a very poor and unsafe substitue for urethral catheter preparation. On the other hand, when cystotomy is performed as the first stage of suprapubic prostatectomy, the patient having been as carefully prepared before hand as for a complete prostatectomy, perineal for example, then its purpose is logical and it will become an important factor in reducing the mortality of suprapubic prostatectomy. By it the suprapubic tissues have a chance to acquire a local immunity to infection and the urinary sinus becomes walled off, so that a week or ten days later, when the prostate is enucleated thru it, the added burden of a double operative wound is avoided.

It may be said, then, that the clinical problem includes a study of the physical fitness of the patient and the preliminary catheter preparation of the urinary tract, with proper judgment in the selection of the time for operative intervention, irrespective of the election of the perineal or suprapublic route. In choosing the latter method, preliminary cystotomy will secure a greater margin of safety.

Perineal prostatectomy has long been recognized as a more benign procedure, and, other things being equal, in the hands of the average operator 3 to 10 out of every 100 lives are a conservative estimate of its advantages over suprapubic prostatectomy. If this is anywhere nearly true, why then has the perineal operation fallen into such disrepute? Delbet reports 18 per cent mortality suprapubically and no deaths by way of the perineum, yet he has completely discarded the perineal method and elects suprapubic prostatectomy for all cases. Why does he sacrifice the lives of eighteen men in every hundred? Because the majority of his perineal cases, he says, have had recurrence of symptoms of prostatism, while the majority of his suprapubic cases have been permanently cured.

Pilcher, of New York, renowned as a two-stage suprapublic expert, has thus stated the situation: "Perineal prostatectomy is an operation for the expert only. Suprapubic prostatectomy is an operation per se which can be easily performed by the majority of surgeons. In the latter operation the chances of accident are less and the certainty of completely removing the obstruction is greater than when perineal prostatectomy is attempted by a surgeon who is not specially trained in the surgery of this region. Many men, encouraged by the brilliant results of a few who popularized the perineal operation, attempted the operation and brought discredit to it by their failures. The same is true to a lesser degree of the suprapubic operation. The fact is that success in removing prostatic obstructions depends upon a fundamental knowledge of the pathology of the disease." This is the explanation of the steadily increasing popularity of the suprapubic route in spite of its greater risk. Surgeons have not considered the lesser mortality of perineal prostatectomy sufficient to warrant the mastery of its technical difficulties, in view of the reported greater functional advantages of suprapubic prostatectomy. We question whether this decision is fully justified, as will be shown by a consideration of the respective structural results.

PROBLEM OF UROLOGIC RISK OR FUNCTIONAL RESULTS

The particular nature of the enlargement and the local complications associated or secondary to it constitute a variable risk for each individual with respect to the ability of any operation to effect a complete cure. This may be termed the urologic risk. An individual with a large diverticulum of the bladder, for example, would not be cured by simple prostatectomy. Complete functional restoration is more difficult with fibrous inflammatory hyperplasias than large glandular ones. Tabes as a complication frequently nullifies all hope of cure. A study of our own cases shows that 24 per cent of our perineal cases were poor urologic risks because of the nature of their enlargement or of some local complication, and all five of the cases in whom a poor functional result was obtained belong to this group of poor urologic risks.

These facts emphasize the importance of a thoro understanding of the local anatomic and pathologic conditions before operation, and it is possible that suprapubic attack is better suited for certain conditions and that perineal enucleation will effect the greater number of cures in other conditions. Of this fact, however, we are not fully convinced, altho we have followed selection of our cases for perineal or suprapubic operation. Our results with large glandular prostates, the type par excellence for suprapubic enucleation, have been better by way of the perineum than transvesically, particularly since we have modified the perineal method of enucleation.

The outstanding fact, in relation to surgery, of the pathologic anatomy may be briefly stated. Prostatic hyperplasia is periurethral and prespermatic. It begins in separate foci in the lateral, middle or anterior lobe groups of gland acini that immediately surround the urethra. Apparently it never begins as a diffuse process involving all parts of the gland, and the posterior lobe is never involved in hyperplastic changes. These separate periurethral and prespermatic foci tend particularly to coalesce, so that the hyperplastic mass very quickly becomes conglomerate, altho in the beginning it started as separate foci. Ring type hyperplasia is very much more frequent than is usually realized, and this is shown by the ease of en masse enucleation suprapubically. As hyperplasia extends, it tends to compress normal prostatic tissue at the periphery so as to form a false capsule about it, and it is within this false capsule that surgical enucleation occurs. The ejaculatory ducts with their connective tissues limit the extent of the enlargement posteriorly, so that the line of least resistance lies toward the bladder, and marked enlargements are always intravesical inside the internal sphincter which in some cases is very widely dilated.

The periurethral, prespermatic and cohesive characteristics of hyperplasia enable surgical enucleation with preservation of the ejaculatory ducts and the external urethral sphincter. By the suprapubic method enucleation is effected inside the internal sphincter which is often markedly dilated and sometimes destroyed thereby. This enucleation may be intraurethral, as is commonly practiced; or it may be extraurethral. By the intraurethral method a finger is forced well into the prostatic urethra and it is pressed anteriorly to form a line of cleavage behind and anterior to the hyperplastic mass. On this line of cleavage, by blunt finger dissection the mass is freed from within outwards and usually removed intact with its associated prostatic urethra. In doing extraurethral enucleation an incision is made over the intravesical portion and the line of cleavage found here by blunt dissection, enucleation being effected from without inwards. Except in very large glands both methods result in complete en masse enucleation.

By the perineal method, if Young's technic is followed, an attempt is made to preserve the prostatic urethra intact, and the hyperplasia is enucleated by separate lobes, first the right, then the left, and an anterior or middle lobe is delivered thru one or the other lateral incisions. For the average sized glandular enlargement the method is surgically ideal, but with ring type enlargements the removal in portions is apt to leave large or small remnants behind which may at once cause a structural defect and a functional disturbance or by their growth later bring about a recurrence of prostatism. It is probably this difficulty of a complete, clean removal more than the anatomic difficulties of approach that have led to the general disrepute of perineal prostatectomy. In very large types of hyperplasia preservation of the prostatic urethra by Young's method of enucleation is seldom possible, and it would hardly seem advisable in view of the pronounced elongation and distortion of the urethral mucosa secondary to the enlargement. If it is left intact in these cases, it would tend to retract in the form of folds or plications, leading to false pockets and tending to form obstructions both to the insertion of instruments and to the urinary stream.

STRUCTURAL DEFECTS

Defects in anatomic restoration are common to both methods, but some are more characteristic of perineal and others of the suprapubic operation. Both methods may be followed by the persistence of tags or nodules at the vesical orifice, and both methods may have been incomplete, in that all the hyperplastic tissue had not been removed.

The common defect in structure of suprapubic prostatectomy is the persistence of a large prostatic cavity which may be connected with the bladder by a large dilated funnel-shaped vesical neck or a contracted obstructing orifice. Cases have been reported of even complete obliteration of the vesical orifice. In the first instance there may be no functional disturbance, or slight dribbling with urinary frequency may be present. In the second instance obstruction to urination of a variable degree is present and it is not at all infrequent to have the vesical neck contracture so marked that complete obstruction with urinary retention results. The frequency of this failure in anatomic restoration following suprapubic prostatectomy is undoubtedly much greater than commonly realized.

Pilcher states that suprapubic prostatectomy effects a cure in approximately 80 per cent of cases which survive the operation. All of the 20 failures in each 100 cases, however, cannot justly be ascribed to the operation, inasmuch as there will be a certain percentage of poor urologic risks in whom the probabilities of cure are small. Personally we have seen and examined seven cases of marked structural defects, following suprapubic prostatectomy performed by other surgeons and all seven the result of surgery. Three of these were incomplete enucleations, and the other four had marked contracture at the vesical neck as above described.

A study of functional results shows that there is a very intimate relationship between structural restoration and functional cure. The importance of correlation of surgery with the pathology before and the anatomic changes afterwards is evident. The formation of a large prostatic cavity after suprapubic enucleation seems largely the result of methods of packing for the control of hemorrhage, and the question arose as to whether a complete en masse enucleation by way of the perineum would lead to a similar postoperative anatomic defect. In order to answer this question we have now operated on thirty cases by a modified method of perineal enucleation with a complete functional cure with respect to urination in all. By its use the main if not the only disadvantage of perineal prostatectomy would seem to have been removed. The method has been reported in detail before the Urologic Section of the American Medical Association and will be only briefly outlined.

By an inverted V incision of the posterior lobe, in place of the usual two lateral incisions, the verumontanum and the ejaculatory ducts can be dropped back and the hyperplastic mass, after division of the urethra anteriorly and at the internal vesical sphincter, can be enucleated intact. There is complete divulsion of the prostatic urethra, and after enucleation a catheter is placed thru the urethra for its restoration just as is done after external urethrotomy. Packing to control hemorrhages is mostly infraprostatic, so that the prostatic cavity is obliterated rather than prolonged and enlarged, as where a large amount of gauze is packed directly into it. Some of the structural results following this procedure have been almost perfect, there being a smooth, competent internal vesical orifice with restored prostatic urethra and a preserved verumontanum with its ducts. There has been, even in the short time the cases have been followed, a high percentage of preservation and restoration of sexual function.

SUMMARY

In our own experience perineal would seem to have greater advantages and fewer disadvantages than suprapubic prostatectomy. In the first place it is a much more benign procedure. We now have eighty-five consecutive cases without death, and our total mortality is only 2 per cent. In the second place it has given much better ultimate functional results. All cases considered, we have found over 90 per cent cures by way of the perineum as compared to 84 per cent suprapubically, and we have 100 per cent functional cures and no deaths in the last thirty cases, in which complete en masse enucleation has been practiced by way of the perineum.

The anatomic difficulties of perineal prostatectomy are not troublesome when mastered. As a matter of fact, it is an easier operation to perform than the suprapubic. The safety would seem to be shown by the fact that in none of our cases have we had incontinence as a result of injury to the external sphincter and in none of our cases have we had trouble from rectourethral fistula. The rectum has been punctured at operation once in ninety-six cases and healed without fistula, and we have had no other or late fistula. Where the enucleation has been complete, there has been no trouble either with persistent perineal fistula. Familiarity with the anatomy of the perineum is a vital necessity to the urologic surgeon, if he operates for cancer of the prostate or disease of the seminal vesicles, aside from the advantages gained by the perineal operation in prostatic hyperplasia. We believe it is time for the pendulum to swing back in its favor and that more urologists should learn to do perineal prostatectomy. Results do not justify its present disrepute or future neglect. Nevertheless, it demands technical knowledge and no surgeon should attempt it without the proper study and preparation.

PRINCIPLES OF PROSTATECTOMY*

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Patients who apply for relief from prostatic obstruction may present associated conditions, that must be kept constantly in mind in efforts for their relief. These are advanced age, complicating disabilities of circulatory, respiratory or digestive organs, infections from catheterization and constitutional debility.

From the beginning conservation of vitality is important. Relief of urinary retention is the first call. This is by the catheter, trocar or cystotomy. Here may follow a chapter on infections and traumatisms, resulting in epididymitis with abscess, suppurative vesiculitis, or pyelitis, that definitely postpone radical operation.

Suprapubic cystotomy under local anesthesia is the next step in any case presenting such complications. The bladder should be well distended, the incision thru the abnominal wall made high, and the peritoneal fold pushed carefully upward before the bladder is opened, so that subsequent enlargement of the wound, necessary for removal of the

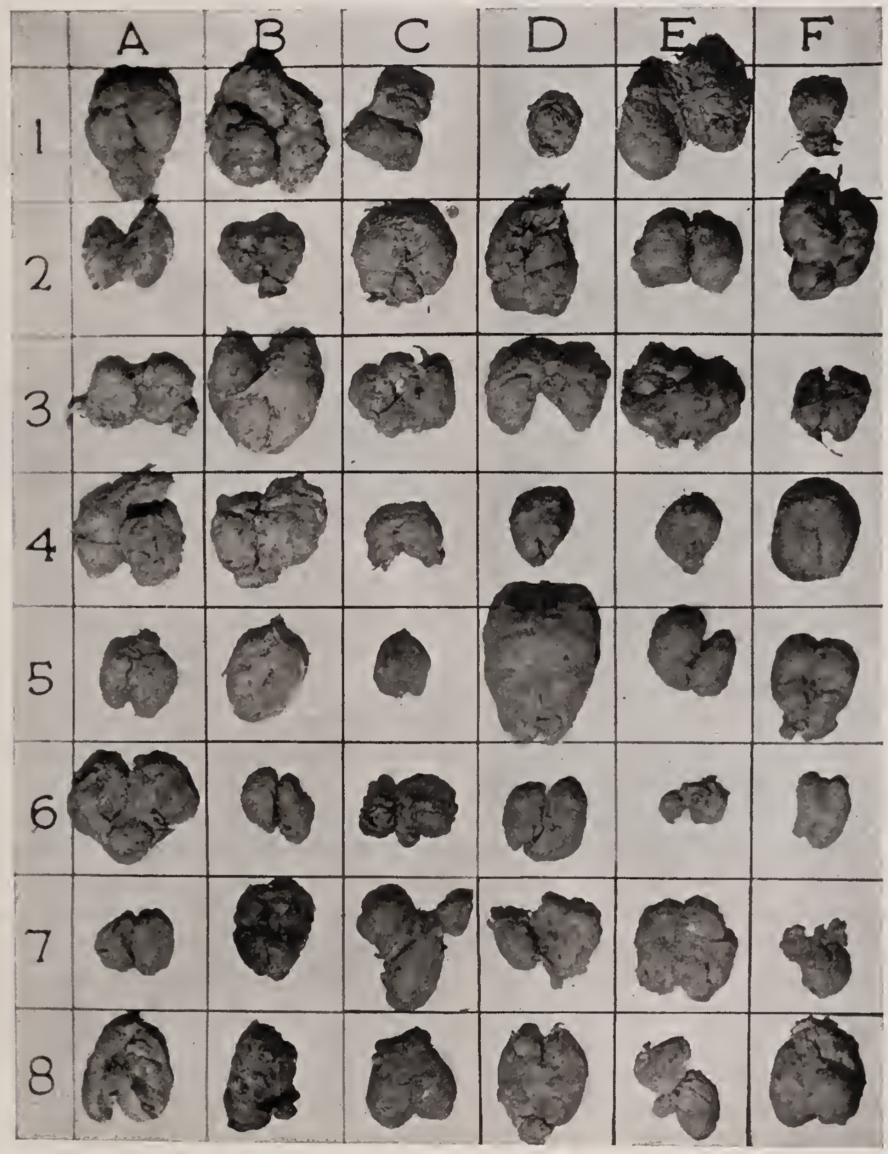

Fig. 1. Group of prostates. Plate illustrating average gross pathology of the prostate gland. Some definitely obstructing prostates are smaller than any on this plate. Also we have had a number considerably larger. These were unfortunately lost in the fire, which destroyed the old Medical School several years ago.

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* From the Rockey Surgical Clinic.

prostate, may be made downward. A short drainage tube, size of the little finger, should be stitched in place.

The complications must then be dealt with, and in doing this the patient should be made ambulant as soon as conditions permit. Two stage operations must be the rule in all such cases. They are both unnecessary and undesirable, when the bladder is clean, urine clear and complications absent. We have here to consider only urinary retention from true prostatic hypertrophy, as illustrated by the photograph of specimens (fig. 1).

The diagnosis must be definite. Retention from tabes, fibrous bars or cancer must be excluded. Neurologic examination, cystoscopy, and a well educated sense of touch in rectal examination will determine this.

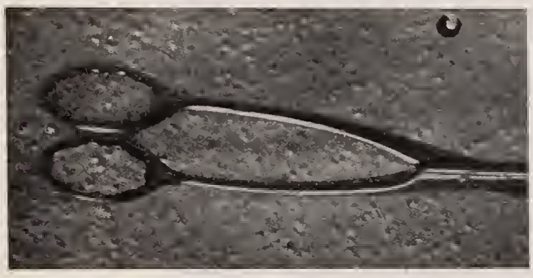


Fig. 2. Rockey's prostatic compression forceps.

Whether the operation is primary in a clean case or secondary, we must keep conservation of vitality well in mind. The simplified operation, which I have elsewhere described, fulfills this first requirement. Minimum trauma and avoidance of important structures, liable to injury, have given the suprapubic route a well deserved preference. This is in definite accord with true conservation of vitality and function.

This technic comprises short median suprapubic incision and enucleation by the bare finger of the right hand. The prostate is supported by two fingers of the gloved left hand in the rectum. After complete separation the glove is drawn from the left hand by the utility nurse, and the gland is delivered by compression forceps (fig. 2). The suspension suture, to hold the bladder up in the space of Retzius, is then placed (fig 3), the drainage tube inserted and sutured, and a few additional sutures inserted in the fascia and skin (fig. 4), and the operation is finished.

Irrigation has been abandoned for more than thirteen years. I first published this after five years of experience with the plan.[1] In the same issue of that journal an elaborate irrigation plan is described from another clinic. A year later we published it again,[2] and in the intervening years have continually demonstrated its practical advantages. In that time we have never packed a bladder, and have never had a severe hemorrhage. Year by year I am more firmly convinced that irrigation after prostatectomy is an error without justification in the physiology of repair.

The first step in the process of wound healing is the formation of a blood clot. The clot has two important primary functions, the arrest of bleeding and the protection of the wound. These are both interfered with by irrigation. A normal blood clot is also more resistant to infection than is diluted blood. When a freshly cut surface is covered with a blood clot, the healing process begins at once. Proliferation of the tissue cells readily proceeds under such kindly protection and with such normal food. Remove this by continuous irrigation, and what takes place? The exposed cells are rapidly devitalized by the harsh contact with a fluid of lower specific gravity than the cell contents when water is used. By osmosis the cells become swollen, lose their plasm and die. Fortunately their dead bodies afford a measure of protection to the deeper tissues until the misdirected irrigation has been discontinued. Like all devitalized tissue, however, this layer of dead cells is an easy prey for the various saprophytic and pathogenic bacteria, whose toxins make further inroads on the reparative process. When repair is at last established by

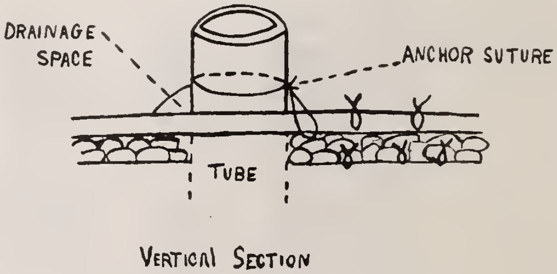


Fig. 3

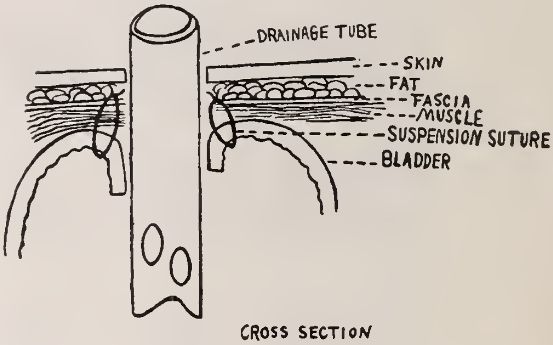


Fig. 4

Figs. 3. and 4. Drainage tube and suspension suture, lateral and vertical views.

the formation of a layer of more resistant granulation tissues, its first task is to remove the enfeebled cells by phagocytosis, and cast off the dead layer as a slough. Then, and not until then, can repair begin in the same manner that would at once take place, where the tissues are protected by a blood clot.[2]

The ambulant postoperative management of prostatics is an evolutionary sequence of the simplified operative technic.[3] This feature of the plan has been developed by permitting the more favorable cases to move about as they desired, and then, seeing the definite advantage to their general well-being, of encouraging the feeble or indifferent to an earlier activity than has been usual. This method of treatment is generally applicable to what might be considered fairly normal cases. The neglected and nearly moribund, that require the preliminary drainage of a two-stage operation, are, however, not infrequently benefited by a short ambulant[1] period before the gland is enucleated. Such treatment is favorable only when a very small amount of tissue trauma has been caused by the operation.

A week postoperative, when the drainage tube is removed, we commonly irrigate once thru a rather large, soft, urethral catheter, to wash out any gross detritus that may remain at the bottom of the bladder. At this time one may introduce a cystoscope thru the suprapubic wound and, while the water is flowing, inspect the healing prostatic cavity. In this way we may easily gain interesting and useful information of the method and progress of recovery.

Even when a large gland has been removed, the cavity is reduced to a small cone, lined with new granulation tissue. The urethral mucosa is seen at the bottom, and the irregular edge of the bladder margin at the top. Across this zone healing rapidly advances without irrigation. In a few cases it may be well, if the suprapubic opening is slow in closing, to safeguard a sufficient patency of the neck of the bladder by the gentle passing of a sound.

The dressing is a simple pad of absorbent cotton, or cellulo-absorbent, covered with a single layer of gauze. The pads are retained with adhesive tie tapes. Over this the ambulant patient wears painter's overalls, of which two or three pairs should be provided.

The patient may be permitted or encouraged to physical effort only as his condition permits. Our usual plan is to have him sit up in bed on the second day, get up in a wheel chair on the third, and walk about as he pleases on the fourth. He enjoys a game of cards, promenade, or the gossip of the smoking room better than an irksome con-

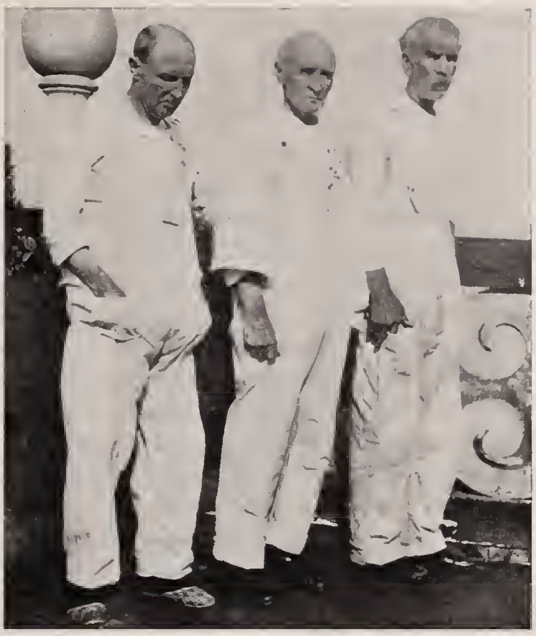
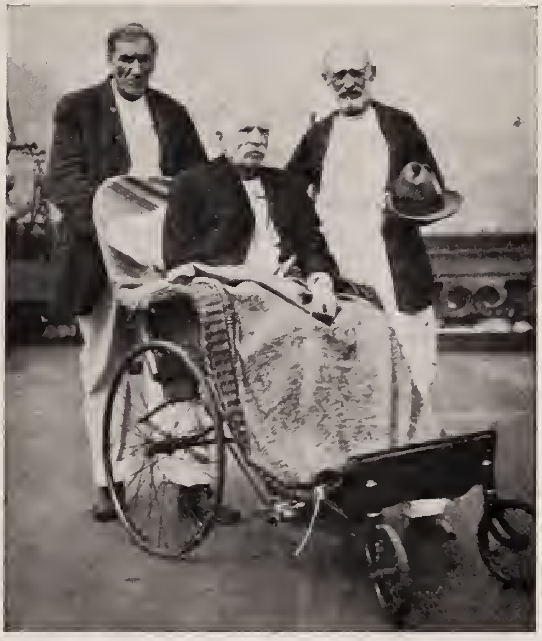


Fig. 5.



Figs. 5. and 6. Illustration of hospital dress for ambulant postoperative management of prostatics. Patients are commonly up and about from the second or third day. The man in the wheeled chair, 77 years of age, had large double hernias. His prostate is the one illustrated at 5 D, fig. 1. These hernias were subsequently successfully operated upon under local anesthesia. This operation was done a year ago. The man, then 77, now 78, has recently returned from a hunting trip in the mountains. He states that he can follow a mountain trail, shoot as straight, cast a fly as well, and pack a deer, as easily as he could 25 years ago.

finement in bed. The problem of nursing care is much simplified. Figures 5 and 6 illustrate the ambulant plan. Continued experience has demonstrated marked improvement in appetite, sleep, general comfort and contentment, and a definite shortening of the postoperative period.

The principles of prostatectomy require efficient relief of urinary obstruction, with minimum disturbance of normal tissue and function, and maximum safety. These are best accomplished by primary operation in clean, and secondary in infected or debilitated cases. Short suprapubic incision, finger enucleation, delivery of gland by compression forceps, suspension suture of bladder, and ambulant postoperative management without irrigation give the most ideal results.

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BACKACHE OF RENAL ORIGIN*

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With the increasing perfection of renal study and diagnosis, many cases of obscure backache are being cleared up and urologic diagnosis is assuming the proportion of an exact science. By the elimination process we can determine whether the backache is of muscular origin, of vertebral disease, of pathology within the abdomen and pelvis, or of diseases of the urologic tract. I shall confine this paper to the latter. Certainly no type of pain has caused the medical profession more embarassment than backache, or diverted more of our patients to the various pseudo-medico-religious cults, as christian science, osteopathy, chiropractic, drugless healers and their off-shoots. This paper is based upon the renal study of a series of cases whose chief symptom was backache. Among them were found such conditions as renal calculus, floating kidney, twisting of the ureter, kinks of the ureter, stricture of the ureter, tuberculosis of the kidney, hydronephrosis, calculus of the ureter and pyelitis.

Character of Pain. There were two common types. First, fixed stationary pain increased by active exercise; and, second, definite attacks of pain occurring at irregular intervals. I will take each one up in order, adding the other symptoms as I go along.

In the analysis of pain we must differentiate as much as possible between the localized points of tenderness, the area involved, how the pain is intensified, whether the pain travels in any definite attacks at short or long intervals. To pain must be added the other differentiating symptoms.

Floating Kidney. Much has been written of this condition and the marked degrees of nephroptosis are easily diagnosed. It is the milder ones which are overlooked. The pain is unilateral, described as a dull ache and intensified by standing erect. In men there is usually the history of a fall or a blow, or occurring after lifting or straining. Often it is severe enough to make them give up their jobs or lay off at intervals. In the army many of these men were unable to drill on account of the backache resulting. The location was just below the twelfth rib. Heavy percussion elicited tenderness. When more severe, attacks of renal colic resulted, with nausea, vomiting and confinement to bed. These attacks lasted often six or eight hours. At times they occurred while in bed, from rolling over to the opposite side. Seldom is there hematuria, but often a unilateral albuminuria without casts. The urinary symptoms are mild. A slight increased frequency of urination without burning. The temperature is always normal. There is no impairment of the renal function or urea output. The general health of the patient is lowered, there being lassitude and disinclination towards physical exertion. A slight loss in weight is often recorded.

Diagnosis is made by means of the pyelogram rather than palpation. Few kidneys are palpable, unless the abdominal wall is unusually thin and the ptosis great. With the pyelogram we have a photographic record of the ptosis. After the ureters are catheterized with lead catheters and a contrast solution injected into the pelvis, an x-ray is taken in the decubitus, then in the erect posture. Often a dilated pelvis is thus demonstrated. Floating kidney in women has been well described, due to its occurrence after childbirth and the resultant weak abdominal walls, but it has been passed by in many men, due to their heavy abdominal walls and the difficulty of an accurate palpation of the kidney. Let me cite a rather typical case of pathologic nephroptosis.

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* Read before the Thirty-Second Annual Meeting of Washington State Medical Association, Seattle, Wash., Sept. 1-2, 1921.

Miss J. D., No. 7624, referred by Dr. H. D. Brown, Seattle, June 1921, for pain and colic in her right side. She was thirty-two years of age, had never been married, and came from a fairly healthy family. She was an undernourished woman, tall, with not very much subcutaneous fat. Her lines were straight, with shallow renal fossa. She had had an appendectomy performed six years ago and an ovarian cyst removed. There had been a couple dilatations of the uterus for painful menses. She had had pain in the back, both sides for a long time, due to a floating kidney and nephropexy was performed for the left one in 1909 with considerable relief. Her last illness has been a steady backache for the past three months, all over the back, but worse on the right side. She is unable to pursue her profession as a dentist, as these attacks of renal colic come on at any time and prostrate her. There is no hematuria and the urine is clear; it shows no albumin or casts. She has lost 18 pounds in the past two years and feels tired out. Kidney belt gives no relief. Her physical examination shows an undernourished woman with the right kidney easily palpable, very low. Left kidney not palpable. The pyelograms revealed a marked nephroptosis of the right kidney,with kinking of the ureter, and the left kidney which had been anchored, buckling a little bit.

Kinks of the Ureter. These occur far more than is generally supposed, and cause very definite pains and symptoms heretofore not understood or thought to be a neurasthenic condition, and not clearly explainable to the physician. The pains are somewhat similar to floating kidney. They are usually limited to one side of the back, occurring about the third lumbar vertebra. The normal ureter is very loosely attached to the posterior surface of the peritoneum but, if it becomes inflamed, will become more or less fixed, so that the peristaltic contractions do not produce the usual even, wave-like motion, as the urine is forced downward towards the bladder. When its support at the upper end is taken partly away, as in a ptosis of the kidney, the ureter will often buckle and fold upon itself, producing well defined kinks. These kinks will shut off the urinary stream just as a kink in a rubber tube filled with water is pinched off. Above the kink the ureter will dilate in an endeavor to straighten it out. The calices develop an abnormal pressure and pain results. This pain is of all degrees, from a dull ache to a colic. The urinary findings are similar to those of nephroptosis. Not all cases of nephroptosis produce kinks, as the ureter merely contracts in its length or the kidney falls outward, making a bowing or arching of the ureter.

The diagnosis is made by means of the pyelogram. These pictures readily explain the patient's backache in a most graphic manner. Often the renal pelvic capacity will be 10 to 30 cc. instead of 5 cc.

The treatment is the same as for nephroptosis. The interesting things about these kinks are the relatively mild symptoms, the mild albuminuria, often intermittent and their frequency. In routine pyelograms for all kidney studies they are far from uncommon.

J. L. P., No. 7592, referred by the U. S. Public Health Sercive. Complained of being run down and having a sore spot over his left kidney. Male, age 27 years, ex-soldier, mechanic, married. He had a dull backache and felt fagged out. His first cystoscopic examination was negative. At this time, however, no pyelogram was made. This was repeated in June, 1921. During this time the pain had not changed its character at all and it was sufficient to incapacitate this man and another study was undertaken. The urines were normal, the bladder was of good capacity and showed no pathology outside of a mild trabeculation. The pyelograms, however, showed a ptosis of the left kidney and several well defined kinks.

I wish to call attention to the mild and often indefinite symptoms complained of by these patients, it being very difficult at times to definitely locate the source of their trouble, and it is only found in the course of a routine examination.

Mrs. S. R., referred by Dr. Walter Kelton, Seattle. She complained of few pains in the right lower abdomen. Age 28 years, married, housewife, never pregnant. She had been pretty well all her life until two years ago, when she complained of sharp pains in her lower abdomen. Not related to constipation. There had never been any nausea or vomiting with these attacks. Her general health is good and she came to Dr. Kelton to locate this pain in her right side.

Examination showed a very healthy appearing young woman. Abdomen negative, no scars, no tumors. Very slight tenderness on deep palpation just over the right iliac crest, no rigidity. Neither kidney palpable. Renal study was made in which the right pelvis held 10 cc. and the left 4 cc. The right kidney on sitting up, collapsed upon itself and produced several well defined kinks. This patient was instructed to refrain from running up and down stairs and from lifting heavy objects which she complained always made her worse.

There are a number of other cases of which I will not go into details, but will show the slides to give you an idea of the prevalence of these kinks.

When a kidney leaves its niche in the small of the back and "floats," it often rotates upon its vertical axis, producing a twisting of the ureter. This is demonstrated by a study of the calices in the pyelograms. Instead of branding out straight, away from the median line, the cups of the calices will look forward, being anteroposterior in direction. This rotation will produce a twisting in the ureter, capable of developing a Deitel's crisis. The symptoms are identical with kinks of the ureter.

Stricture of the Ureter. It was Hunner who in 1916 first called our attention to ureteral stricture and opened up a new field of urologic disease. This stimulated a study of the ureter, and since then the field has been constantly broadening, until now the surgeon is keenly alive to this not uncommon condition and the symptoms they produce in his patient. Most all the reported cases so far have been in women, but in my experience this condition occurs almost as frequently in men.

I will not dwell upon the etiology, but will pass on to the symptoms. Pain comes first. It is a diversified one. The most common is pain first in the kidney region; the reason is obvious. The stricture itself is seldom painful. The pain is produced when the renal pelvis becomes overdistended. At this stage, however, pressure from above against the stricture will produce a localized tenderness along the ureter, especially if the ureter is inflamed. This often simulates the pain of ureteral calculus. Again, the pain may be referred to the bladder or anywhere within the abdomen. One must rule out disease of the gall-bladder, the duodenum, the appendix, the stomach and the pelvic organs in women. Very often the picture is that of an acute abdomen, with general tenderness and rigidity. Nausea and vomiting are not infrequent. The temperature is usually normal, tho it may be elevated in the presence of a pyelitis.

The urine itself is usually negative, but often a trace of albumin is found, red blood corpuscles, micro-organisms and pus cells. The blood count is usually normal; leucocytosis is rare unless the colon bacilli are active, when it may run from 15,000 to 25,000. Again, when the stricture is low, the pain is referred to one of the sacroiliac joints or the hip. Remembering the length of the ureter and the many organs behind which it passes, the wide diversity of pain is not so surprising. The general health is little impaired. The nutrition is good and between attacks the patient has good health. Renal function shows little change outside of a little tardiness in the appearance time of the phthalein.

The diagnosis is made by catheterizing the ureters, using as large a catheter as possible, filling the ureter with a contrast solution and making a pyelogram. The patient always will tell you the pain is identical with those of the attacks in location and character. They confirm the diagnosis for you. After dilatations all their pain symptoms are gone and they are more than happy. The results are certainly gratifying to everyone.

Mrs. J. A. K., No. 7350, referred by Dr. Walter Kelton, Seattle, on account of pain and a feeling of pressure in the lower abdomen, left hip and spine. She was a young woman of 31 years of age, married, no children. Trouble began four years ago with constant backache and a feeling of pressure in the lower abdomen. This pain spread to the left hip and apparently in the joint. There has been some bloating and indigestion with cramps. An operation was performed in September, 1920, for gall-stone disease and a cystic ovary. The latter was removed. The gall-bladder was opened and drained. Number of small stones were removed. Good recovery. The pain, however, in the back and left side persisted and she presented herself again for relief March 1, 1921.

Dr. Kelton then felt that there was something probably in the ureter which could account for this condition, and a renal study was made on the following day. Bladder capacity normal, mucous membrane normal, the ureteral orifices were easily located. The orifices appeared normal. Urine was negative. However, an attempt to pass a catheter up the left ureter revealed a stricture 3 cm. from the bladder. A pyelogram showed a well defined stricture 3 cm. past this point, beyond which the ureter was dilated.

The patient went home and was relieved by this stretching to a considerable degree. She returned, however, on March 22, 1921, for a second dilation. Using ethylchloride anesthesia the left ureter was dilated with a No. 9 and No. 11 Garceau bougie. Oil was injected into the ureter. Several letters have since been received from this patient, claiming that she is free of all pain and has had no return of symptoms of any kind. She is very grateful for her relief.

Hydronephrosis. The pain of this condition is usually unilateral and generally a dull ache in the small of the back. When accompanied by kinks, stricture or calculus, it becomes colicky in character. The pain is increased by physical exercise, just as in nephroptosis. The pelvis fills up, the pain increases steadily, until there is full throbbing pain in the back. It may become quite severe. Finally the ureter straightens out or is relieved by a catheter, when there is a sudden gush of urine and the patient is immediately relieved. If the hydronephrosis is great, some tumefaction is noticed in the region of the kidney with considerable tenderness.

The diagnosis is made by pyelography. The capacity shows considerable increase over the normal 5 cc., often taking 50 to 100 cc. Renal function is usually normal. The attacks of pain nearly occur at more or less regular intervals. It is the mild degrees of hydronephrosis which are the most interesting ones to diagnose, as the symptoms are mild and not clearly defined.

F. S., No. 7672, referred by the U. S. Public Health Service. Male, age 35, single, ex-soldier. This trouble began five years ago with irregular complaints. He had one attack of gastric disturbance. Three years ago he had backache and pyuria, at which time he had renal calculi removed from the left kidney. His pains at present are rather vague, running from the small of the back on the left side, down the ureter, also into the left leg and hip. Abdomen shows an irregular scar of the left flank, which resulted from his kidney drainage. Urine slightly turbid, shows many bacilli resembling colon and few pus cells.

Renal study was made to determine the source of his backache and a hydronephrosis was revealed. Examination July 5, 1921, showed bladder with thick walls, varicosed veins, no ulcers. Both ureteral orifices were large. The right pelvic capacity was 55 cc., left, 60cc. Phthalein appeared on the right side in five minutes, fifteen seconds, on the left side none in twenty minutes. No urine was obtained from the left side. Pyelogram showed a large irregular pelvis with numerous cavities.

Renal and Ureteral Calculus. In a study of the pain incident to renal calculus, we find two general types. First, colic, occuring in about 50 per cent of cases; and, second, fixed pains. This colic is well understood and easily recognized. It comes on acutely, usually starting in the groin and radiates into the kidney. It may last a few minutes or many hours. It may occur daily or only at long intervals of months or years. Often there is nausea or vomiting. A common occurrence is abdominal distention, with severe pains in the abdomen, resembling obstruction of the bowel. Walking or exercise may increase the pain or it may develop thru the night when the patient is at perfect rest.

It is the fixed pains, however, which are of the most interest to us. These are mostly over the small of the back, tho they may be anterior. They are of all degrees of severity, and often attributed to lumbago, gall-stones, chronic appendicitis and many other conditions. Kelly gives the percentage of these pains as 32. The pain is increased by bodily motions, worry, mental fatigue and anxiety.

Accompanying these pains there is hematuria, with at least the presence of red blood corpuscles in the urine. In a large per cent (75-80) there is vesicle irritation. Gastric symptoms are noticed, as tympany, nausea, vomiting and indigestion.

In cases where the calculi are large, anuria frequently occurs. This involves both kidneys, apparently reflex. This is sometimes seen during catheterization of the ureters and a reflex anuria takes place. This anuria is much more likely to occur when there is an infection present. It may last twenty-four hours. I have seen a temporary anuria in a patient with a contracted bladder with prostatic obstruction, which lasted twelve hours.

The diagnosis I will not go into in detail. Briefly it consists of a careful urinalysis for red blood cells, the presence of albumin which is common; casts often occur, pus and bacteria when infection is present, (about 75 per cent); the kidney is frequently tender to palpation or percussion. Cystoscopy and catheterization are most valuable, either to see or locate the calculus. The divided renal function gives more information. The wax-tipped catheter is a great aid, and the x-ray is of the very greatest importance, especially the steroscopic picture. The x-ray is indispensible in affording us knowledge as to the number, size and location of the calculi.

A. L. L., No. 7182, referred by the U. S. Public Health Service, December 1920, on account of a dull backache, headache, some insomnia, poor appetite, feels tired out, all in, no ambition. There were no urinary symptoms. There was nothing in his medical history except that he once fell from a wagon and was hit in the pit of the stomach.

His physical examination revealed nothing outside of the urinalysis, which showed a urine containing blood, albumin one-half of one per cent (Esbach), hyaline and granular casts, no pus, no bacteria, no tubercle bacilli. Phthalein output for the first hour 25 per cent, second hour 15 per cent, total 40 per cent. He was diagnosed nephritis. Urinalysis made after this date, Jan. and Feb., showed about the same condition. No change in the general condition.

Feb. 18, he was submitted to a renal study. A large stone was found in the right kidney with the presence of albumin, some pus cells, few staphylococci, few granular casts. The left side was negative. Function was equal on both sides. This stone was removed thru a pyelotomy on Feb. 22. It was about two inches long and one inch wide and covered with mica-like crystals. This case was interesting on account of the earlier diagnosis of nephritis and the unrecognized calculus.

Pyelitis. Due to its inflammatory nature, these cases present a very definite picture. The backache is severe and directly over the kidneys. It is often bilateral. There is marked local tenderness, both anterior and posterior to the kidney. The heavy kidney blow is not necessary. The fever is high, 103° and 104°, comes on acutely and is accompanied by chills and heavy sweats. The patient looks ill. There is anorexia. The leucocyte count is usually high. The urinalysis shows an albuminuria, pus cells and bacteria. Often a diagnosis can be made without cystoscopy. However, it definitely confirms the diagnosis and affords an opportunity for pelvic lavage. The x-ray reveals the size and shape of the pelvis and determines the presence or absence of calculus.

The pain of even a mild pyelitis will give a more or less constant backache for a long time, even after the bacteria have disappeared. This is probably due to a thickening of the pelves or a secondary inflammatory condition around the pelvis and ureter.

Mrs. P., No. 6850, referred by Dr. McKinney, Seattle, for a very severe pain over her right kidney. She was a young woman, age 22, married, delivered of a full term baby three weeks ago by cesarean section. Since the fourth month of pregnancy she has had attacks of pain over this kidney, with cloudy urine and the appearance of many motile bacteria. This became very acute after the delivery of the child, with a temperature of 100° to 104°, with severe rigors and extreme pain in the kidney region. This fever and pain was almost continuous. It was not relieved by either heat or hot packs and she really looked very serious for a while. The urine was quite bloody showing red blood cells, pus and B. coli in large numbers. A renal study was made June 29, 1920, which revealed a bilateral pyelitis of B coli. She was treated with mercurochrome lavages.

This patient continued to run a high fever for weeks after this, but finally the pain and tenderness disappeared and she was discharged from the hospital on July 20. She was interesting on account of the extreme amount of backache that was experienced.

Tuberculosis. Of all the backaches of renal origin, tuberculosis affords us one of the most characteristic. It is a chronic disease and seldom manifests acute symptoms. Pain in the kidney is the chief symptom, unless pieces of pus and debris are caught in the ureter, when colic simulating stone is produced. It is characterized as a dragging, heavy, distressing pain; rarely radiates, tho it may run down the ureter. This localized pain, combined with vesicle irritability, is always most suspicious. At first the irritability is reflex but later due to vesicle involvment of the tuberculous process. This vesicle disturbance is almost immediately improved by a nephrectomy. A study of the urine shows an early polyuria, red blood cells, an intermittent or constant hematuria, turbidity of the urine, with pus cells, albumin, casts, the presence of tubercle bacilli (50-60 per cent of cases). Secondary organisms are found in a small percentage of cases.

Cystoscopy will tell of any involvment of the bladder, and catheterization of the ureters will add much to our data, while an x-ray of the kidney itself and a pyelogram are most essential. The ureter is frequently greatly enlarged.

E. L., No. 6103, referred by Red Cross Society. Austrian, age 28, single, coal miner. He was referred on account of frequent urination and right-sided backache, especially if he attempts to hold his urine. This patient had had a left nephrectomy performed March 13, 1918, for tuberculosis. His bladder was very small and irritable. Usually fifteen or twenty minutes was the length of time he could retain the urine. Cystoscopic examination was made on Nov. 22, 1919. The bladder was found to be markedly trabecular, ureteral openings lying within sacculations.

On April 2, 1921, this patient again appeared, referred by the U. S. Public Health Service and a renal study was made. A diverticulum apparently existed. The bladder capacity was 30 cc. Prostate generally enlarged. Trabeculation was marked. Mucosa was heavily scarred, no calculus, no tumor. There was apparently a diverticulum on the left posterior wall. A cystogram was later made and it showed that the sphincter of the right orifice had been destroyed. The ureter was greatly dilated, raising the pelvis and by back pressure this ureter and pelvis were used as a supplementary reservoir for the bladder which was hour glass and contracted. This was rather a curious condition and it showed the compensatory power of the urinary tract to overcome such handicaps as a constricted bladder.

Neoplasms. The commonest are hypernephromata, the sarcomata, carcimona of the renal pelvis, adenoma, fibroma, papillomata of the renal pelvis, embryomata, unilocular cysts, polycystic kidneys, adrenal tumors, hematoma of kidney.

We are interested solely in the symptomatology, namely hematuria, pain and tumor in the side. Hematoma occurs in 65 per cent of cases. It is total, not terminal, often microscopic and intermittent.

Pain is very common, as high as 82 per cent of cases. It is a fixed pain. It may be only a dull, heavy ache in the small of the back, unilateral or it may be quite severe at times. If large clots are passing down the ureter, colic may develop simulating calculus. The diagnosis is further clarified by the x-ray, showing a tumor mass. The pyelogram shows a "spider-like" pelvis, so well described by Braasch. The calices are crowded and stretched until they are quite thin and give the stellate shape in the pyelogram.

Nephritis. The backache of nephritis is a dull ache, usually bilateral. There is no difference in the two sides, unless a unilateral nephroptosis exists. The pain is a fixed one. It varies in intensity. A large meat ingestion often produces it, also a heavy meal. It is largely a tired, dragging pain as the patient described it. This pain often exists, even when the albumin is light and the casts very few. The diagnosis is made by the urinalysis, the impaired renal function and the blood pressure increase.

Perirenal Inflammation. The etiology is interesting, starting as an infection in the kidney itself, the liver, the pleura, the appendix, the gall-bladder passages, trauma and hematuria, typhoid fever, scarlet fever, smallpox, puerperal infection. The involvement is by metastasis thru the blood.

Symptoms. Pain comes first. It may come on very insidiously and not be very definite, or it may come on very suddenly, with high fever, tenderness and trauma. In chronic abscess the fever may be intermittent, or no fever at all. The leucocyte count will vary as much as the temperature. I recall one very large abscess, in which there was no fever at any time, and a leucocyte count of 7,000. Often the pain is simply a dull ache across the loin or will run down into the leg. Sooner or later there is tumefaction, depending largely upon the nourishment of the patient. No definite outline is the rule. There is usually increased muscle resistance. Unless the kidney itself is involved, the urinalysis is negative.

Psoas Abscess. While not a renal lesion, psoas abscess will give a backache and at first simulate perinephritic abscess. The pain is also a dull ache in the kidney region, extending down the line of the ureter. However, we have in addition pain in the hip and retraction of the thigh. The x-ray frequently fails to show any pathology of the vertebrae, so the diagnosis is clouded. Let us illustrate.

B. B. Z., No. 7709, referred by the U. S. Public Health Service on account of pain in the back, limited to the left side. Male, age 25, married, coal miner, ex-soldier, habits temperate. There is nothing of interest in his family or medical history except a slight swelling of the right shoulder at ten years of age. He states that the left side of his back started to hurt in 1918 as a result of a strain. This side always sensitive. For the past six weeks it has been worse, shifting from left back into left hip, with flexion of left thigh. A forced straightening of the left leg moves the pain higher up. General health is good. No fever at any time and no chills. For the past few weeks a lump or tumor has developed in the lower left abdomen just below the kidney. This is only slightly tender. No urinary symptoms. No loss in weight.

X-ray pictures were negative, showing no displacement of the vertebrae. The abdomen is full, kidneys not palpable. To the inner side of the left anterior superior spine there is a hard mass, fixed, not fluctuating. Joints all negative. A renal study was made July 12, 1921, at which time normal urines were obtained from both sides. The pyelogram showed a rotation of the left kidney and considerable displacement of the left ureter towards the median line. This could mean only one thing, that there was a mass posterior to the ureter which was lifting it upwards and inwards.

A diagnosis of psoas abscess was made and operation performed July 21. An incision was made in the left abdomen and this mass exposed extra peritoneally. It was incised and a large quantity of thin pus released. This patient was interesting on account of the early symptoms of backache, unilateral, and the very definite data furnished by the pyelogram.

BENZYL BENZOATE IN CASES OF BLADDER DISTENSION

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One of the most difficult phases of the care of postoperative and postpartum cases, to the average surgeon or obstetrician, is the restoring of the normal function of the bladder. For the first few hours or days after a hard labor or a major surgical operation many patients are unable to void naturally. At the same time the fluid intake must be kept up to a good level. The bladder may become painfully distended and easily palpated above the symphysis, and the practitioner is forced to resort to catherization with its attendant dangers. This difficulty of the after-care lead the authors to try one of the newer drugs, used with success in other conditions involving smooth muscle.

We will give below, therefore, the results of a short series of cases, with a few typical illustrations and tentative conclusions, in the hope that later the series may be extended, both by ourselves and by other interested members of the profession, so that more final conclusions as to the actual value of the remedy can be obtained.

Mrs. E. was delivered normally of an eight pound baby, with no more than the usual difficulty.

Altho the usual ‘stunts” of forcing fluids, sitting up in bed, listening to running water, hot applications, etc., had been tried, the patient was unable to void, and consequently was catheterized once. The bladder again rapidly filled up, and eighteen hours after the first catheterization the patient was in great distress.

The successful use of benzyl benzoate by us in controlling the after-pains of labor suggested its use in this distention of the bladder. Consequently, this first case was given 2 cc. of a 20 per cent alcoholic solution of benzyl benzoate by mouth, and ten minutes later voided normally 52 ounces of urine. In eighteen hours again, she was given 2 cc. of the drug and voided 34 ounces. From that time on she maintained normal control of the bladder.

Mrs. G. had not voided twenty hours after a normal delivery. Her bladder could be outlined above the symphysis and she was in great discomfort. She was given 2 cc. benzyl benzoate by mouth, and voided naturally 30 ounces of urine. No further catheterization or administration of the drug was necessary.

In all the drug was tried on twelve other similar obstetric cases. In none was the passage of urine delayed more than twenty minutes after the administration of the drug, and only in two cases was it necessary to repeat the dose. One other case, similar to the above, resisted the action of the remedy and finally had to be catheterized, but later administration of the drug produced normal micturition.

Mrs. C. had not passed her urine twelve hours after an operation for cystocoele and prolapse. She was complaining of pain in the region of the bladder and it could be outlined by percussion. She was given 4 cc. of benzyl benzoate and fifteen minutes later urinated normally 27 ounces of urine.

The drug was also used with success in a case of carcinoma of the recturm with extensive surgical excision, in a case of hysterectomy for fibroids, in a case of circumcision and in a case of lobar pneumonia.

A 20 per cent alcoholic solution of benzyl benzoate, such as may be obtained from any drug house, was used, in doses of 2 to 4 cc. or a half to one dram. It should be given when symptoms of bladder distention become severe, that is, eight to twelve hours postpartum or postoperative, or when the bladder can be outlined by palpation or percussion.

The writers would be glad to hear from other members of the profession having experience in the treatment of these conditions or in the use of this drug.

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THE AVERAGE PATIENT. A STUDY OF ONE THOUSAND CONSECUTIVE HISTORIES OF SICK PEOPLE.*

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Statistical papers in general are cold and uninteresting. However, if such a paper can set forth the results of a careful routine study, it may bring out some interesting facts. Diagnosis is both an art and a science. The accuracy of diagnosis depends among other things upon how completely and accurately we have made use of the primary and accessory means at hand. It is by reviewing carefully kept records of our work that we learn how well we have done this.

The following statements are based upon the records of 1,000 consecutive patients who have had a complete examination. A “complete examination,” as the term is used here, includes a minimum study of a careful history, a complete physical, a routine blood pressure, a routine urine and a routine Wassermann. In addition the records show any further clinical procedures considered necessary, as x-ray examinations or other special laboratory work and records of operative procedures.

We often wonder, what is most often the diagnosis made as patients are seen day after day in the office. In this series of 1,000 patients 1226 diagnoses were recorded.

The Gastrointestinal Tract was the most commonly involved system in this study. Approximately 23.5 per cent (289 cases) received a gastrointestinal diagnosis. The gall-bladder was the most common trouble maker, 8 per cent of the one thousand patients having this diagnosis. The appendix was next, 4 per cent (38 cases) being diagnosed appendicitis.

Functional stomachs were next and constipation was far from uncommon, being the final diagnosis in 2.8 per cent of the total or 10 per cent, (28 cases) of the alimentary tract troubles. Duodenal ulcer was present in 24 cases, this being 2.4 per cent of the total series and 8 per cent of the gastrointestinal complaints. Achylia was diagnosed twenty times. Carcinoma of the gastrointestinal tract occurred in 14 cases, 9 of which were gastric. Gastric ulcer was diagnosed only 7 times in a thousand patients.

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*Read before King County Medical Society, Seattle, Wash., Jan. 17, 1921.

*From Mason-Blackford-Dowling Clinic.

The Cardiovascular System was the next most commonly diseased, 243 or approximately 20 per cent of these patients receiving a heart or blood vessel diagnosis. Thirty-two, or 3.2 per cent of the cases were myocardial, while 1. 4 per cent (or 14) of the cases were aortitis. There were 80 cases of valvular disease, a mitral lesion being present in 85 per cent and aortic disease in 15 per cent. There were 23 arrythmias, including auricular fibrillation, extrasystoles, heart block, paroxysmal tachycardia and auricular flutter. Auricular fibrillation was the most common disorder, being present in 11 cases. Angina pectoris was the diagnosis in 1.6 per cent of the total series. Only one case of angina pectoris had a positive Wassermann. Forty-nine or 5 per cent of all patients gave evidence of blood pressure well above normal.

The Nervous System was involved in 184 or about 15 per cent, of the one thousand patients seeking relief of symptoms. One hundred-ten of these people, or 11 per cent of the total series, received a diagnosis of nervous exhaustion which in our opinion is a clinical entity. There were 15 migraines, 16 hysterical and sexual neuroses and 8 epilepsies. The remainder included various dementias, hysterias, neuralgias and other less usual spinal and cerebral conditions.

The Urinary Tract was the source of trouble in 49 cases, or 5 per cent. Of these nephritis was the diagnosis in 28. There were 5 tuberculous kidneys, one congenital cystic kidney and a very interesting case of bilateral calcified kidney. Other diagnoses included 6 cases of pyelitis and one of ureteral stone.

The Genital Tract was the source of trouble in 90 cases, or 9 per cent. The female sexual organs were abnormal in 75 cases and the male in 15. There were 12 inguinal hernias and 6 breast cases, 3 of which were carcinoma.

A General Infection was present in 134 of these thousand patients. Seventy had syphilis, demanding treatment, including 6 central nervous system lues and 6 tabes. There was one case of malaria and in 51 cases the tonsils and teeth were diagnosed as the source of trouble.

The Respiratory Mechanism was involved in 92 cases, there being 32 cases of tuberculosis, or 3.2 per cent of the total series, and 29 cases of simple bronchitis. Asthma is recorded in 11 cases.

Ductless Gland Disease is recorded in 51 cases. Of these 12 were exophthalmic goiter, 16 toxic adenoma of the thyroid and a few unusual clinical conditions, such as two Addison's disease, one Frohlich's syndrome and one myxedema. Thirteen cases, 1.3 per cent, of the total series were diabetics.

The Bones and Joints, Blood, Skin and Special Senses were involved in only 72 of this series and include 19 anemias, 6 of which were primary, one leukemia, one Hodgkins, 2 Pott's disease, one carcinoma of the skin and two cases of otosclerosis.

No Diagnosis was possible in 4.9 per cent, they being recorded as indeterminate, and in 4.4 per cent the diagnosis was nothing abnormal or negative. These are interesting because one out of 10 patients seen either was normal or could not be diagnosed.

In listening to this recital of statistics you should bear in mind that many of these patients were seen in consultation or after something less than a thoro search had failed to locate the trouble. Also that the data are taken from histories, in which there is all of the human amount of error in recording findings. Altho all work done in the office failed to make a diagnosis in nearly 5 per cent of these patients, it is likely that observation and more thoro investigation in a well organized hospital, where more special diagnostic means are available, would have materially decreased this percentage.

The Value of a Routine Wassermann on the blood is clearly shown by the following figures. Of these 1,000 histories, Wessermann records show 7 per cent positive reactions. In only 30 per cent of these positives was it possible to elicit any history of a syphilitic infection. There may be some who will here raise the old question of the specificity of this laboratory test. This has been argued pro and con from time to time, always with the same conclusions, viz., that, altho a few conditions other than lues may give a positive, the percentage is low and almost negligible. There is a much greater possible source of error in the technic of any given laboratory, but in this series this has been practically eliminated by careful checking thru other laboratories of specimens of blood drawn at the same sitting, especially in all of the less definite cases. When we see that the Wassermann report made or confirmed the diagnosis in 5 per cent of the 1,000 cases, that is in cases with a negative syphilitic history, its value can hardly be questioned. About one-third of the cases gave a total inhibition or 3 plus reaction; over one-half gave a two plus and only 8 a weak or one plus reaction. All reactions less than two plus were discarded, unless supported by a history or clinical evidence. It is interesting to note that only 50 per cent of these positives were in cases of essentially active, latent or central nervous system lues and that the balance were coincident findings with a great variety of other conditions. Of coincident conditions heart and aorta were most commonly found affected. Two cases with a negative blood Wassermann, one of which had been diagnosed elsewhere as progressive muscular atrophy and the other multiple neuritis, gave a total inhibition and high cell count in the spinal fluid, and several tabes had weak blood reactions.

Enchancing the value of a routine Wassermann, a few remarks are pertinent about the urine analyses. The records show 8 per cent of the urine analyses varied from the accepted normal. Keeping in mind the fact that an abnormal urine does not in itself mean kidney disease and that it may be only a transient finding, contrast this percentage of 8 per cent positives with a nearly equal percentage of positive reports from a test in itself diagnostic, namely the Wassermann test. Few of us ever fail to examine the urine nowadays and, in view of the above facts, can we afford to make a diagnosis without a Wassermann.

The reports from the roentgenologic department in the series of cases reveal certain rather pertinent facts. There were 680 patients examined by x-ray, not including fractures or other surgical bone cases. Many of these had more than one part requested, as teeth sinuses and chest may have been examined on the same patient. One-fourth of the total series (264 cases) had chest x-ray and in one half of these (114 cases) the roentgenologist reported findings other than normal. One-third of the positive reports were definite tuberculosis. Of the 22 active tuberculous cases, only 8 had positive sputa. A positive sputum is the only means other than a positive x-ray plate which lifts the diagnosis of pulmonary tuberculosis from the uncertainty of opinion to the definiteness of fact.

Three hundred and thirty-nine or one-third of the total series had gastrointestinal barium meals. Of these 41 gave positive x-ray evidence of pathology. One-half of these, or 6 per cent of all cases with gastrointestinal complaints, were duodenal ulcer. One-fourth of these were carcinoma. At first glance it may seem unusual that only 12 per cent barium meals gave the clinician additional information on the case. Apparently this is justified until you consider the value of a negative report, based upon the following facts, namely, that 90 odd per cent of duodenal and gastric ulcers and nearly all malignancy of the gastrointestinal tract are detected by x-ray. Then it is evident that the value of a negative report is almost as great as a positive one. Surgery was advised by us in 21, or about one-half of the cases diagnosed as pathologic by the roentgenologist, and 10 consented to the operation. In all of these the clinical and x-ray diagnosis was confirmed by the surgeon.

A rather surprising figure resulting from this study is that 362 (36 per cent) of one thousand patients are shown in the records as having had previous surgery. These 362 patients had submitted to 414 operations, 298 minor and 116 major operations. Sixty appendectomies, or more than one-half of all majors, were recorded, in which the appendix was the sole surgical objective. After deducting 9 acute appendices, we have 51, or nearly one-half of all major operations recorded, performed for a chronic appendix. Twenty-four of these stated that they were not relieved in any way of their symptoms by the operation. The majority of these 24 were considered by us to be suffering from functional or upper abdominal pathology.

Of 1,000 patients, 491 were females and 92 of these, or 1 in 5 had had pelvic operations. Of 116 patients who had had major operations, four had postoperative herniae requiring repair. One hundred twenty-eight or about 13 per cent were advised by us to seek surgical relief of their ailments and 80 operations were performed upon 71 patients.

It is interesting to note the age incidence of disease in this series of history records studied. The greatest number of patients were in the fourth decade of life. The fifth decade almost equalled this, there being a fairly rapid decline after the sixth decade. The age incidence in the third and seventh decade was about 8 per cent each.

Returning again to the question of making certain measures routine, a few remarks will be made concerning blood pressure. Of this series 17.5 per cent had a systolic pressure over 150, 7.5 per cent over 175, 2.5 per cent over 200, 1 per cent over 225 and 2 cases over 250. The highest was 280 which is not especially exceptional. Only six of the pressures over 175 were in patients under 40 years and only three in patients over 70, the greatest number, or 40 per cent occurring in the fifties. Only one positive Wassermann was found in these cases and, of far more interest, only 11 cases had an abnormal urine. It is interesting to note how many were about the menopause age and that a high blood pressure was twice as common in the female as in the male, and very often, in fact in 85 per cent there was a negative urine.

There were 5 per cent of the series who had a systolic pressure below 110 or a hypotension. The lowest systolic was 90 and occurred in a marked asthenic. The clinical diagnosis was tuberculosis, malignancy, nervous exhaustion or anemia in practically all of the hypotension cases.

The diastolic blood pressures presented some interesting data. Ten per cent of the cases had a diastolic over 100 and 2.5 per cent over 120 The lowest diastolic was 25 in a case of aortic disease, and the highest 170 in a case of chronic nephritis. Our records bear out a statement made by the writer in a recent paper that a diastolic pressure over 120 is in itself sufficient evidence for a poor prognosis and the course in these cases rarely runs over twelve to eighteen months.

The highest pulse pressure recorded was 170 in a case of cardiorenal disease with a double aortic lesion, while the lowest was 20 and of quite frequent occurrence.

In summarizing this paper, the following points stand out. One out of five patients received a cardiovascular diagnosis; one out of six received a gastrointestinal diagnosis; one out of seven received a nervous system diagnosis; one out of eight received a genitourinary diagnosis; and one out of twelve received either a respiratory or gall tract diagnosis. One out of twenty could not be diagnosed and one out of twenty-five was considered normal. One out of fourteen patients had a positive Wassermann and one out of twenty had a positive Wassermann with no history of infection. One out of every two, in whom the physical suggested lung pathology, the suspicion was confirmed by x-ray, while one out of ten, with a history and physical suggestive of gastrointestinal pathology, gave x-ray evidence of the same. Practically one out of every two patients, who had a history of appendectomy for a chronic appendix, was not relieved by the operation. These failures were apparently due to the fact that the patient was neurotic or that upper abdominal pathology had been overlooked at the time of previous operation.

One out of six patients had abnormally high blood pressure and one out of twenty abnormally low blood pressure. Only one out of twelve showed an abnormal urine. In view of these figures, altho they are based upon a comparatively small series, we cannot today afford to make diagnoses and direct therapy without having employed any and all means necessary to aid in the accomplishment

FOCAL INFECTION FROM THE DENTIST'S STANDPOINT

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Cases are referred daily to the dental profession by physicians who wish advice regarding the possibility of the mouth being a contributing cause to a certain systemic disorder. The usual procedure of the dentist is to radiograph the teeth and advise the extraction of those which are abscessed and those beyond repair, and impress the patient with the need of prophylaxis.

All he knows of the patient's systemic condition is that the physcian has referred the case on account of rheumatism or some other ailment of possible focal origin. His hopes are high when he discovers pathologic conditions in the mouth and he anticipates relief of symptoms after the removal of all infection. Time passes and no relief is evident.

After several such failures the physician and dentist, both discouraged with results, condemn focal infection because of its failure to attain the desired results. From the medical side we have the over-enthusiastic physician who, before having carefully examined his patient, sends him to the dentist for the so-called "wholesale extraction". In many instances there have been high hopes of success. The patient does not improve and naturally, after a series of several similar examples, the physician's belief in focal infection becomes rather skeptical, and it so continues until he terms it a joke. The patient also joins the force and goes about his community saying, "they pulled out all my teeth and it hasn't helped me one bit". In many instances, too, the dentist, if he has watched the case, joins the opposition.

On the dental side we have the over enthusiastic dentist who, without any medical history or examination of the case whatever, extracts the teeth in the hope of relieving the patient's symptoms. He also soon finds himself becoming rather skeptical. Later he decides he is opposed to the focal infection theory. One would naturally think that focal infection was the cause of every disease recorded in the pages of medical literature, and that the extraction of teeth was a specific treatment for every disease, with the exception perhaps of syphilis and gonorrhea.

Can we not discover a way which will inhibit the over-enthusiasm of some, and stimulate the skepticism of others into a constructive activity? What then is the solution of this problem? It lies in the careful study of the case and a thoro consideration of a differential diagnosis. Snap judgments are too often given in this line and they are the cause of many of the failures.

It is of greatest importance always to trace focal infection and not merely to make a snapshot, emperical diagnosis, ascribing the cause to some dental trouble, just because such a point of view happens to be the prevailing and fashionable viewpoint at the present time. We may define focal infection "as a circumscribed lesion of a bacterical nature, later resulting in infection of a contiguous or non-contiguous part by the same bacteria or their toxins."

From the definition it is clear, even if the presence of bacteria in a circumscribed area is demonstrated, that of itself does by no means constitutes a focus of infection. It is an old established fact that bacteria may be present in certain parts of the human body for long periods of time without creating bodily infection at all and without even producing local symptoms. For example, the organisms of diphtheria, pneumonia and many others are frequently carried about by perfectly healthy people for a great length of time, and these people are entirely ignorant of the fact that they carry germs of such a highly infectious nature.

The general practitioner, however, is not so much concerned with the variety of organism present as he is with the fact that focal inflammations are commonly caused by the staphylococcus viridans, or that this same organism can give rise to systemic infections. Of this there can be no doubt, as the observations of many men in many parts of the world have confirmed the results. The bacteria have been found in the focal infections, similar organisms have been found in the secondary areas, and animal inoculations have reproduced the lesions; there is no proof lacking that we are dealing with the cause and effect. Therefore every practitioner who makes the diagnosis of an apical abscess must remember that he is dealing with a condition that has the potential power of causing very serious trouble.

The experimental evidence that supports the theory of teeth being the cause of general diseases does not represent what actually takes place in the human body. All the efforts thus produced and described may be produced in other and more natural ways and more uniformly. The theory is not supported clinically. The teeth are a necessary part of the body and disturbances about them respond to treatment as readily as a similar condition in any other part of the body. In many instances there will be no ill effects, but the possibilities must always be considered.

Clear up all diseased areas, avoid chemical, mechanical and surgical trauma. Do not regard every difference in light and dark as revealed by the x-ray a sign of disease. Many of these areas are cicatricial tissue and have already been taken care of by nature.

Clinical signs are to be regarded. First make an intelligent effort to save all teeth. Do not regard all bacteria as disease producers. Look to tissue condition as the controlling factor. Persons with no teeth have general troubles fully as much as people with teeth. More gastric ulcer is caused by lack of teeth than thru dental diseases. We eliminate all other factors, such as normal living, a good sane diet, rest, fresh air, nervous disturbance high tension living, and see only the infectious. We should take a comprehensive view of the problems of physiology and of disease before the present careless sacrifice of teeth extends further.

WILLIAM HARVEY AND HIS DISCOVERY.*

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Three hundred and five years ago today one of the greatest events in medical history took place in London. A doctor under forty years of age gave a lecture in the amphitheatre of the Royal College of Physicians on April 16, 1616, that profoundly changed the course of medical progress. He lectured on the circulation of the blood. His name was William Harvey.

Let us look back for a moment and think about the world of arts, science and literature before Harvey's time. One is astounded by the achievements in science, especially in engineering and mathematics, of the ancients. The Babylonians and Alexandrians alone accomplished tremendous mechanical feats, many examples of which are still preserved. With the splendor of the Greek and Roman literature and art you are familiar. Medicine, however, progressed comparatively little during this period. Always closely associated with religion, its advancement was retarded by the church. Investigation of disease was limited to clinical observations, often misinterpreted. Treatment consisted of blood-letting and drugging. In spite of the limitations of independent inquiry into the form of man by dissection and into the functions of the parts by animal experimentation, remarkable clinical descriptions were recorded. Those of Hippocrates and Galen are best known. Medicine was completely under the dominance of the writings of these two men nearly up to the time of Harvey. The spell was broken at the time of the Renaissance, at first by anatomists and then by the physiologists.

The great rebirth of the arts and literature from its long quiescent period of the middle ages came about 1500. In spite of the impetus given the arts, the Renaissance reacted unfavorably on science, for it turned science, and especially medicine, backward a thousand years, to the days of Hippocrates and Galen. There was a great revival of Galenic and Hippocratic thought, and whatever independent investigation had taken place in the latter part of the middle ages was discountenanced. It became against the laws of the land and against the laws of the church to offer anything in medicine that did not conform to the texts of Galen and Hippocrates. One or two men, however, shook off these chains of repression that the Renaissance had brought to science.

Before 1500, Leonardo da Vinci, in Florence and Milan, had begun human dissections as a part of his instruction in painting. In spite of the protests of the church he dissected assiduously, and made most remarkable sketches of the bodily organs. Many of these beautiful and artistic drawings are preserved in Windsor Castle, in England, where you may see them. The *Quarderni d'Anatomia,* of Leonardo, containing these drawings, are classical anatomic masterpieces. The description of these drawings, as written by himself on the margins, is in mirror writing, a form of deception apparently successfully used by Leonardo for years. The Latin can be easily deciphered if the page of the book is held against a mirror and the reflection examined. He also experimented with living animals and was probably the first to record the pumping action of the heart and to note the pressure exerted by it in the arteries near the heart.

We pass to another part of Italy, near Venice. We will find in the seventeenth century a great university of science established at Padua. In the latter part of that century two great men of science taught there, Galileo and Vesalius. Of Galileo I have no time to speak except to call your attention to him as one of this small group of men giving their lives to independent inquiry in an age of persecution and suppression of new ideas. Let us, however, linger a minute longer with his brother professor at Padua, Vesalius. This great anatomist produced in 1543 the first great book on anatomy, *De Humani Corporis Fabrica.* He was only twenty-eight years of age at the time. His dissections were done with the greatest secrecy to avoid the persecution of the church. The wonderful drawings in this book were made by Calcar, a pupil of Titian. We probably also owe to Calcar the fine portrait of Vesalius, at the age of twenty-eight. The Fabrica is one of the epoch-making books in medicine, a record of investigation fundamental to the understanding of disease. In this book one finds a detailed description of the heart and blood vessels, thus leading up to the discovery by Harvey.

We must note one other investigator before we come to Harvey. This is Servetus. Vesalius and

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*A Lecture to the Senior Class of the University of Oregon Medical School, Portland, Ore., April 16, 1921.

Servetus were both prosectors together in Paris. He did extensive research in physiology and described clearly the pulmonary circulation in 1553 (*Christianismi Restitutio*). He was severely persecuted for his work, and finally burned at the stake, at the age of forty-four. The world lost a great physiologist. Before he died all copies of his book but one were burned. This single copy is now in the Bibliotheque Nationale, in Paris, a shrine that every peripatetic medical school student ought to visit. Thus before Harvey's time we had good anatomic descriptions of the heart by Vesalius and Leonardo and good physiologic description of the pulmonary circulation by Servitus. Harvey supplied all the other factors necessary to the discovery of the circulation except the capillary exchange, ouly discernable thru the microscope.

Harvey was born in Folkestone, England, in 1578. His family were fairly well-to-do, for they sent him to Caius College, at Cambridge, and then on a continental tour to study medicine, at the age of nineteen. He went to Padua, and found Galileo and Fabricius, the latter a pupil of Vesalius in anatomy. Vesalius had resigned from Padua before Harvey entered there as a student. One can see today the old lecture theater, where this boy of twenty first received instruction in anatomy. After his work at Padua, upon receiving a degree from there, he returned to Cambridge where he received another medical degree, and then established himself in London, the center of medical thought in England at that time.

He soon became a member of the Royal College of Physicians and in 1615 was made professor of anatomy. It was in the spring of the next year that we find him first lecturing on circulation. Fortunately for us, his lecture notes are preserved, and one finds a paragraph describing the circulation, initialed with a modest "W. H.", to indicate that this paragraph was considered as his own discovery. The idea of the circulation of the blood was extensively ridiculed. Harvey tells us that no man over forty, and few under it, believed in his discovery. Because of this disbelief in Harvey's works there grew up the idea that he was unstable and visionary. His practice fell away and he was practically driven out of London. He was rescued, however, by Charles I, made a court physician, and followed the fortunes of the king in his war against Parliament. When the king made his headquarters at Oxford, Harvey became the Warden of Merton College (1645-6). In his declining years he gave his library to the Royal College of Physicians, built a lecture room for them, and endowed an annual lecture, the Harveian Oration. He died in his eightieth year, in 1657.

Four years after Harvey's death Malpighi (*De Pulmonibus*, 1661) described the capillary circulation, and a few years later, in 1686, Leeuwenhoek, the inventor of the microscope, actually saw the passage of the corpuscles from the arterioles to the venules. Thus the last link in the chain was forged.

Harvey stands out preeminently as the first great physiologist using independent inquiry in an age of persecution. Slowly but surely he convinced the world by the facts as he observed them. Others had seen the circulation of the blood without understanding; Harvey observed and understood and, armed with the courage of his convictions, stood out against the covervatism and oldfogyisms of his age. After twelve years Harvey published his book, *De Motu Cordis et Sanguinis,* when he was convinced of the worth of his discovery and when a few of his friends insisted upon it. The year 1628, therefore, is one of the great beacon lights in medical history. Only a knowledge of these great events in our profession will enable us to interpret medicine today. Without them we sail an unchartered sea.

Chronic Ulcerative Colitis. Sixty-five cases of chronic ulcerative colitis of unknown etiology have been observed by Frank C. Yeomans, New York (*Journal A. M. A.*, Dec. 24, 1921). No cases due to parasites, tuberculosis, syphilis or other recognizable causes are included. The disease is characterized by an acute or gradual onset, most frequently between the twentieth and fortieth years of life; ulceration of the colon as the essential pathologic condition; dysentery, either continuous or with remissions, as the cardinal symptom: a protracted course of many months or years, and a guarded prognosis. Until and unless a special or specific micro-organism is isolated as the causal agent—a rather unlikely probability—the treatment is symptomatic and empiric. Treatment in the vast majority of cases is medical at first, this failing, surgery is indicated. The drugs employed by Yeomans have ranged from the usual tonics and intestinal antiseptics to arsphenamin, emetin, yeast and Bulgarian bacilli, the last by mouth, by colonic implantation, and through an appendicostomy. Local treatment comprised colonic irrigations, instillations, and topical applications through the sigmoidoscope.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington, Idaho and Utah.
Devoted to the Interests of the Medical Profession of the Pacific Northwest

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EDITORIAL

BEST DIET FOR THE DIABETIC

The confusion in the literature as to what constitutes an optimal diet in a diabetic patient seems almost hopeless to the average practitioner. Thus we have the "cereal cures" of Falta,* the now obsolete "oatmeal cure" of Von Noorden, and very recently the startling "total dietary restriction, low protein, high fat" diet of Newburgh and Marsh.** To reconcile these seems quite impossible, yet Woodyatt***,of the Otho S. A. Sprague Memorial Inst. Laboratory for Clinical Research, at Rush Medical College, has presented an analysis of the "Objects and Methods of Diet Adjustment in Diabetes" that is both masterful and satisfying.

Woodyatt maintains that the discrepancies are dependent upon, first, confusion as to what the anomaly is that characterizes diabetes; second, the fact that clinicians think of food supply in terms of diet, often neglecting the endogenous sources of energy; and, finally, upon the custom of thinking of food as so much carbohydrate, fat and protein, without regard to their ultimate metabolized representatives as they circulate after absorption. His analysis of these three problems is an education in the physiology and metabolism of the disease. The clinician who studies this article carefully will treat his diabetes intelligently and to better purpose, particularly with regard to acidosis, especially in the prevention of this dreaded complication. He points out the illogical position assumed when a physician fasts his patient to desugarize him, by showing that a diabetic will burn about one hundred gms. of fat while fasting and by so doing lower his fat reserve to a degree which will increase his protein losses. If given one hundred gms. fat as diet, he will burn the fat ingested and more nearly approach a desirable sparing of his proteins. He explains Newburgh and Marsh's striking results with high fat diets as taking advantage of this fact. He has evolved mathematical formulae, by which diets may be studied to the end that they may be well balanced, non-ketogenic and adequate in calories.

JUSTICE FOR THE RESERVE CORPS OF THE U. S. PUBLIC HEALTH SERVICE

For many years the U. S. Public Health Service has been a very important factor in maintaining the health of our nation, guarding against the invasion of epidemics and supervising other important matters concerning public welfare. The scope of its functions was enormously increased as a result of the world war. In consequence of the expansion from this source the number of hospitals under its supervision increased in a little more than two years, from twenty-two to sixty-five, containing approximately twenty three thousand patients. It is estimated that the care of disabled veterans will probably continue for a period of fifty years. The merchant marine has increased nearly three times in the past six years, with a proportionate increase of the beneficaries of the Public Health Service. There has likewise been a great increase in the quarantine functions, emigration duties, the control of interstate spread of diseases and carrying on a constructive program relative to the preservation of the national health.

The organization of the Public Health Service has never altered since 1889. Regular commissioned officers now number one hundred ninety-nine, while the enormous increase of the work of this department has been carried on by the Reserve Corps which now numbers eight hundred eighty-four men. Their duties and compensations are the same as those of the regular commissioned officers, yet their status with the government is temporary and uncertain. The service is handicapped at the present time in maintaining a scientific corps of personnel because of the conditions under which employment is offered. Competent doctors can not be secured for temporary employment, so that professional "floaters" are more likely to be attracted than persons seeking public health service as a life career.

In order to correct this unsatisfactory situation, a bill was introduced into Congress last fall "to reorganize and to promote the efficiency of the United States Public Health Service." It provides that not to exceed four hundred fifty officers of the Reserve Corps should be transferred to the regular Corps of Commissioned Officers after suitable examinations to prove their qualifications and efficiency. This plan will place the officers of the Reserve Corps upon the same status with respect to promotions, pay and allowances and provides for retirement, as is current in other government medical service. This would call for no increase in appropriations, providing only for reorganization of the Public Health Service with the existing appropriations which are ample to carry this into effect. It seems obvious to any one that this bill simply makes just provision for a deserving body of medical men and that it should be speedily passed at the next session of Congress. It is requested that physicians in the Pacific Northwest should write to their Senators and Congressmen, urging the support of this bill in order that this group of brother practitioners may receive a square deal from the U. S. Government.

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*Die Mehlfruchte Kur bie Diabetes Mellitus, Berlin, 1920.

**Arch. Int. Med. 25:647, May, 1920.

***Arch. Int. Med. 28:125, Aug., 1921.

THE PUBLIC AND THE PHYSICIAN

In the past the people in general have had a distinctly negative attitude toward matters of health, negative because they have a desire to avoid disease, but also because they have not supported broad movements tending toward disease-prevention. The trend among people has been toward *remedies* for disease not toward *practical prevention.* It is most unusual for them to consider health until there is some form of discomfort; indeed, often not until discomfort is great. This is but another way of saying that the average person regards health as quite automatic, needing no attention until its automaticity is disturbed. This is a fundamental error.

The future demands that people direct attention toward the causes of disease. It demands that they bring to bear upon themselves principles of conduct based upon such knowledge. In short, they must know how to avoid disease. To know how to remain well in the highest degree involves a scrutiny of the very foundations of health, and to adopt intelligent effort the people must allow themselves to be directed by medical thought. The Spokane County Medical Society has taken a most aggresive step toward the advancement of these principles. They have entered into an arrangement with one of their daily papers for the publication of an article every day on some subject of general interest by a member of the society. This departure from the practice of "dignified" silence in the past will most certainly have salutary effects. The articles thus far published have been well received, and are bound to develop into one of the greatest powers for good. It is because the profession has been truly deficient in the observance of the interest the public has a right to expect from medical men that the world is so full of isms, pathies and pseudo-philosophies in medical affairs.

MEETING OF PACIFIC NORTHWEST MEDICAL ASSOCIATION AT SPOKANE

The preliminary announcement of the organization of the Pacific Northwest Medical Association appeared in this journal several months ago. As already stated, it is proposed at the annual meeting of this organization to assemble leading members of the profession from various parts of the country, thus presenting an attractive program. Then programs of state association meetings will be filled by papers from their own members. Judging by the program as outlined for the first meeting to be held in Spokane in July, next to the meeting of the American Medical Association in St. Louis this meeting will be one of the best held in the United States next summer. The following men have promised to be present:

Prof. Henry Christian, professor of Theory and Practice of Medicine at Harvard; Dr. William Engelbach, professor of Medicine, St. Louis University; Dr. Arthur D. Dunn, professor of Medicine, Creighton University, Omaha; Prof. W. B. Cannon, Department of Physiology, Harvard Medical School; Dr. John Butler, assistant professor of Dermatology, University of Minnesota Medical School; Dr. Oliver Ormsby, professor of Dermatology, Rush Medical College; Dr. L. H. Hirschman, professor of Proctology, Detroit College of Medicine and Surgery, and Dr. Alfred W. Adson, Neurologic Surgeon, Mayo Clinic. In addition to these there will be a prominent eastern surgeon and a prominent pathologist. The names of these last two men probably can be announced within the next month.

The president of the Portland City and County Medical Society has notified the executive committee that the Portland physicians are planning to attend in a body. A special car is to be secured for those who wish to go by train and an automobile caravan will be arranged for those preferring to go by auto. Reports received from various portions of the Pacific Northwest and Western Canada show that great interest is being taken in the meeting. An attendance much greater than that at the tristate meeting held in Portland last July is expected.

PACIFIC COAST ASSOCIATION OF ANESTHETISTS

The Pacific Coast Association of Anesthetists will hold its first scientific meeting at Yosemite, Yosemite Park, May 15-16, in conjunction with the meeting of the Section on Anesthesiology of the California State Medical Society. A splendid program of pertinent papers is in the making for this occasion and the sessions will offer those in attendance every opportunity to acquire an intimate knowledge of what is latest and best in the science and practice of anesthesia.

This association was founded at Coronado, in May, 1921, thru the united efforts of the Southern California, Northern California and Seattle Societies of Anesthetists and other interested anesthetists of the Pacific Coast and Rocky Mountain States. Membership is open to all licensed and qualified members of the medical and dental professions, as well as to research workers holding doctorates of similar standing, who are interested in advancing the specialty of anesthesia. Anyone wishing to present a paper during the meeting should at once notify the Secretary, Dr. Eleanor Seymour, 1329 South Grand Ave., Los Angeles. This is an opportunity for all anesthetists of the Pacific Coast and Rocky Mountain States to find out what their associates know about the specialty of anesthesia and to exchange researches and clinical experiences for the benefit of their specialty.

NEW ADVERTISEMENTS

Attention is called to the following new reliable and trustworthy advertisements that appear in this issue. The Winkley Artificial Limb Co., of Minneapolis (page 1), is well known in this line of manufacture. Laurel Beach Sanatorium (page 28) is a recently established tuberculosis institution, located in a suburb of Seattle. Banning Sanatorium (page 31), in Southern California, presents its special features and advantages for treatment of tuberculosis.

MEDICAL NOTES

OREGON

Dr. A. L. Houseworth, who has practiced in Marshfield for the past fourteen years, has gone to Southern California where he will practice in the future.

Dr. George C. Knott, who has practiced in Glendale for the past seven years, has located for practice in Independence.

Dr. P. J. Peniston, of Portland, who has been in charge of the city bacteriologic laboratory for the past two years, has resigned from the position and expects to locate for practice in Hawaii.

Lane County Medical Society held a meeting at Eugene, Dec. 8, at which the following officers were elected for the ensuing year: Pres., A. H. Ross, Eugene; Vice-Pres., Gavin Dyott, Cottage Grove; Sec'y-Treas., C. D. Donahue; Censor, S. N. Kerron.

Change of Official. Last month Dr. Jay Tuttle, who has been in charge of the quarantine station and public health station at Astoria, was relieved from office after serving for four years. In his place was assigned Dr. H. M. Manning, recently from Biltmore, N. C.

WASHINGTON

War on Diphtheria. Pierce County Medical Society has issued a circular to the parents of Tacoma, calling their attention to the menace of diphtheria and the means of its prophylactic treatment. After stating that fifteen children in that city died of this disease last year, all of whom could probably have been saved by a proper treatment, a description is given of the toxin-antitoxin preventive treatment for this disease. The public is urged to have their children receive this means of protection.

Smallpox Increasing. In Walla Walla smallpox seems to have made a vigorous start with the opening of the school term. A large number of cases were reported in the past two months, resulting in the order for the vaccination of school teachers, janitors and pupils. All students at Whitman College were ordered to be vaccinated.

New Hospital Opened. The Lane Cottage Hospital, at Okanogan, was opened last month. It is a one story and basement building with accommodations for twelve patients. It contains operating room and other usual equipment of a hospital. It was built at a cost of $6000.

Whatcom County Medical Society held its annual meeting at Bellingham Dec. 12. The following officers were elected for the ensuing year:

Pres., S. S. Howe; First Vice-Pres. Lyle Greenwood; Second Vice-Pres., C. S. Hood, Bellingham; Third Vice-Pres. E. S. Clark, Sumas; Sec'y., Max Mahlig, Bellingham; Treas'r., J. R. Morrison, Bellingham.

Yakima County Medical Society held its meeting in Yakima, Dec. 12, electing the following officers for the ensuing year: B. S. Cerswell, Pres.; O. M. Brown, Vice-Pres.; Henry Storgaard, Sec'y.; F. W. Nagler, Treas'r.; C. A. Rimcke on the Board of Censors.

Sentenced to Penitentiary. Dr. Howard Blake, physician for the Libby-McNeil cannery at Libbyville, Alaska, was last month sentenced to serve a year and a day at the McNeil Island penitentiary by Judge Cushman, sitting in the Federal court in Seattle. His offense was the prescribing of morphine for drug addicts.

Dr. Elmer Nicholson, of Seattle, has returned after a seven months tour of Europe, during which he visited the leading clinics of Great Britain, France, Germany and Italy. He reports industry in Germany to be going on at top speed.

Dr. C. B. McCown, of Yakima, has been appointed County Health Officer in place of Dr. Richard Connell who is still suffering from injuries received in an automobile accident last July.

IDAHO

License Examinations for 1922. Examinations in medicine and surgery will be held at Boise, April 4 and October 3. Information and application blanks may be obtained from the Bureau of License.

The Inland Empire Medical Association held a meeting with a clinic at Lewiston, Dec. 8. About fifty doctors were present, including men from Spokane, Pullman, Portland and Idaho cities. Clinics were held in the morning at the hospitals and papers were presented in the afternoon.

Hospital to be Improved. The U. S. Hospital, at Boise Barracks, is to be enlarged by the addition of quarters for the treatment of tuberculous patients. Word has been received from Washington that the Public Health Hospital Service has authorized the expenditure of $50,000 to build one unit of this addition. It is expected that construction will begin within sixty days.

New Hospital Established. The Clearwater hotel, of Orofino, has been purchased and remodeled into a hospital. The second floor of the building has been arranged for the accommodation of ten or twelve patients.

Dr. J. P. Gray, of Boise, has been appointed school physician for the Industrial Training School at St. Anthony in place of Dr. Harshbarger, who was retired on account of ill health.

Dr. A. S. Needles, who formerly practiced in Montana, has located in Montpelier.

Dr. H. A. Anderson, of Rigby, has been appointed county physician in place of Dr. Call resigned.

Dr. Otteraan, recently of Spokane, who has recently practiced at Troy, has located his permanent home at Kendrick.

OBITUARIES

Dr. John H. Hustis died at Portland, Ore., Nov. 25. He was buried at Hubbard, where he practiced from 1874 to 1887. He was born in Dearborn County, Ind., in 1843. He served thru the civil war and moved to Oregon in 1874 settling in Hubbard. He moved to Portland in 1887.

Dr. H. S. Martin died at Spokane, Wash., Dec. 11, following an illness of a year. He was born in Guelph, Ont., in 1855. He was a graduate of the University of Toronto Medical School. He practiced fourteen years in Ontario, locating in Spokane in 1898, where he practiced until the time of his death. He was especally interested in live stock and developed the Bellwood Farms of about a thousand acres near Valleyford.

Dr. David L. Smith, of Spokane, Wash., died Dec. 20, of arteriosclerosis and cerebral hemorrhage after an illness of two weeks. He was 72 years of age, born in New York City in 1849. He graduated from New York University and Bellevue Medical College. He practiced in New York until 1889 when he moved to Spokane. He served for two terms as County Coroner and two terms as City Health Officer.

Dr. J. D. Sherrick, of Seattle, died Dec. 8 from pneumonia. He was 70 years of age, born at Canton, Ohio, in 1851. He graduated from the medical department of the University of Michigan in 1877. He practiced in Kansas for 21 years. He moved to Puyallup where he practiced for a year. In 1900 he moved to Seattle, where he established a drug company. He opened a drug business in Edmonds in 1907 and four years later retired, living since that time in Seattle.

Dr. J. M. Miller, of Dayton, Wash., died of cerebral hemorrhage, Dec. 12. He was 63 years of age, born in Mercer County, Pa. He was graduated from the Eclectic School of Medicine in San Francisco, and later studied in St. Louis. He practiced in Dayton since 1887 and was highly esteemed by a large circle of acquaintances.

Dr. R. Walker, of Spokane, Wash., died Nov. 30, after an acute illness of a few hours. An attack of cerebral hemorrhage two years ago forced him to give up practice. He was 60 years of age. After he had practiced for some time in the East he located at Opportunity in 1913. He moved to Spokane about a month ago.

Dr. Eugene W. Hill, of Colfax, Wash., died at Tacoma, Dec. 14, aged 57. He was a graduate of the University of Baltimore. He served for six years in the Panama Canal Zone under

Surgeon-General Gorgas. He served as a government physician on the Coeur d'Alene and Quinault Indian Reservations.

Dr. E. A. Sizer, of Cosmopolis, Wash, died Nov. 26, following a week's illness. He was 50 years of age. He studied at the University of Michigan and later graduated from Rush Medical School in 1897. He located at Gray's Harbor in 1910.

Dr. J. M. Miller, of Dayton, Wash., died Dec. 13, from cerebral hemorrhage. He was 63 years of age. He had resided at Dayton since 1887. At one time he served as city health officer.

Dr. A. L. Foreman, of Tacoma, Wash., died Dec. 1. He was 84 years of age. He formerly practiced in California but was resident of Tacoma during the past eleven years.

Dr. Marcus Fried, of Portland, Ore., died at Los Angeles, Cal., Dec. 14. He was born in California but came to Portland many years ago, where he became a well-known practitioner. About a month ago he went to California for his health.

BOOK REVIEWS

Edited by Kenelm Winslow, M. D.

Surgical Anatomy. By William Francis Campbell, M. D., Surgeon-in-Chief at Trinity Hospital, Brooklyn, N. Y. etc. Third edition, revised. 681 pages with 325 original illustrations. Philadelphia and London: W. B. Saunders Company, 1921. Cloth $6.00 net.

The author's claim that "the purpose of surgical anatomy is to present anatomical facts in the terms of their clinical values" and that "anatomic accuracy is the keynote of surgical technic," is consistently born out in this very readable volume. From the scalp to the sole of the foot, each region is adequately and accurately described. With few exceptions the old nomenclature is used, proving probably something of a handicap to those students who have been taught to use the B. N. A., now the standard taught here and abroad. May we question the statement that "the deltoid is the only abductor muscle of the arm"? The supraspinatus muscle also has this action, in that it fixes the head of the humerous in the glenoid cavity, facilitating the action of the deltoid. The deltoid alone would impinge the head of the humerous beneath the acromial process. And again, one is cautioned "never support the elbow by splints." Does not this rule out many of our abductor splints now so much in use and which do support the elbow? FORBES

Morris's Human Anatomy. A complete Systematic Treatise. By English and American authors. Edited by C. M. Jackson, M. D., Professor and Director of Anatomy, University of Minnesota. Sixth edition, revised and largely rewritten. 1507 pages. 1164 illustrations, 515 in colors. $10. P. Blakiston's Son & Co., Philadelphia, 1921.

Morris's Anatomy is an old friend to students of this subject and it is a pleasure to find that it has not been allowed to suffer in the matter of revision and supplement. The present edition is a complete treatise and the authors responsible for the various sections are well known American authorities. To help the work of the student there is a systematic discrimination in the use of sizes of type, the smaller being used for details and the larger for the more fundamental facts. The B. N. A. in its Anglicised form is continued in use, the fourth edition being the first general text-book of anatomy to adopt this nomenclature. We notice many new figures thruout the book and a pleasing alteration in some of the older ones. FORBES

Squint. Its Causes, Pathology and Treatment. By Claude Worth, F. R. C. S. Consulting surgeon to the Royal London Opthalmic Hospital (Moorfields), etc. Fifth edition. 242 pages. $3.50. P. Blakiston's Son & Co., Philadelphia, 1921.

At the same time that this volume is published, the second edition of the author's "Yacht Cruising," makes its appearance. The excellence of his work done on squint may be partially accounted for by the fact that he has such an excellent hobby as yacht cruising. The publishing of both these books at least demonstrates the versatility of the author. Both the Worth care and training of the squinting child with his amblyoscope and the Worth operation are nearly standards in their relative fields. The most apparent changes in his operation are in the care of the sutures, which are now run thru sterile vaseline instead of being kept in paraffine, and the use of a straight needle with sharpened blade instead of the curved needle for the scleral stitch. He also keeps his patient in bed with both eyes bandaged for about ten days instead of for a day or two. At the present time he is doing very few tonometries, depending almost entirely upon advancements to obtain his results. While there are a number of types of good squint operations, there is no questioning the excellence of the Worth advancement. BENTLEY

A Treatise on Cataract. By Donald T. Atkinson, M. D. Fellow of the American Academy of Opthalmology and Oto-Laryngology, etc., with original illustrations. 150 pages. The Vail-Ballou Company, New York, 1921.

This treatise to a very great extent is a description of the individual methods that the author likes to use in operating and in the care of his cataract cases. To this he has added some historical data. The plates illustrating the text, for which the author must have gone to considerable trouble and expense, are original. The book may be of some practical importance to the tyro, but is certainly not exhaustive enough to demand the attention of the experienced opthalmic surgeon. More care should have been taken in reading the copy before publishing this volume. BENTLEY

The Practice of Urology. A Surgical Treatise on Genitourinary Diseases, including Syphilis. By Charles H. Chetwood, M. D., D. D., F. A. C. S. Former professor of Genitourinary Surgery, New York Polyclinic, etc. Profusely illustrated. Third edition. 830 pages. $8.00. William Wood & Co., New York, 1921.

Following, as the author aptly puts it, a progressive-conservative attitude, this edition adheres largely to the general principles set forth in the original work. No radical changes have been made in any department covering the domain of Urology and, while the author shows no lack of tendency toward progressive thought, he hesitates to give sanction to innovations, whose efficacy is yet unproven by time and experience. Especial emphasis is laid on symptoms, technic of examination and operations on kidney and bladder. Improvements in the manufacture and construction of cystoscopic and roentgenographic instruments are held by the author to have aided greatly in the department of examination and diagnosis. This third edition is so arranged as to meet the needs, not only of the general practitioner and specialist, but of the student as well, and undoubtedly will attain the distinction in the domain of Urology which it deserves. THOMAS

Ephraim McDowell, "Father of Ovariotomy" and Founder of Abdominal Surgery. With an appendix on Jane Todd Crawford by August Schachner, M. D., F. A. C. S. Louisville, Kentucky. Octavo volume of 350 pages. Price $5. Attractively printed and profusely illustrated with plates in double tone. J. B. Lippincott Company, Philadelphia and London, 1921.

This work is an attractive example of the bookmaker's art as to paper, printing and binding. It presents a worthy biography of a great American pioneer in surgery. In these days it seems truly remarkable that a country practitioner, with limited and crude resources, should have been the first man to have performed ovariotomy, and thus be the founder of abdominal surgery. The author calls attention to the neglect which the medical world has shown toward one of the foremost heroes of medicine and benefactors of humanity. The object of the book is to call attention to this neglect and to arouse an interest in this pioneer master of abdominal surgery. Like all pioneers in any branch of science, he was persecuted and abused. More than half a century elapsed after the first ovariotomy before a favorable word was said by a French professor. It was not until 1861 that the operation for ovariotomy was adopted by the French and English profession. This book also features the history of the heroine who was the subject of the first ovariotomy. A sketch of her life is included and much information concerning her which has hitherto been unknown. An extensive McDowell bibliography is appended. SMITH.

The Life of Jacob Henle. By Victor Robinson, M D. Formerly Editor of the Medical Review of Reviews, etc. 117 pp. $3.00. Medical Life Company, New York, 1921.

This is a sketch of a medical man, whose name is familiar to every medical student. The author states that heretofore there has been no life published in English. He has obtained from many sources the facts concerning this interesting man. The biography is divided into various periods, from that of medical student, thru the period of his residence in various German universities, to the culmination in his distinctive scientific work. He is well known to the medical profession in consequense of his histologic and anatomic descriptions, particularly dealing with the structures of the eye. This is an attractive biography of an interesting man. SMITH

Mental Hospital Manual. By John Macarthny, M. R. C. S., L. R. C. P. Senior Assistant Medical Officer, London County Mental Hospital, Colney Hatch, etc. 215 pp. $5.25. Oxford Medical Press, London and New York. 1921.

This is planned as a practical handbook for the physician who becomes connected with the staff of a mental hospital, and it is well arranged to serve this purpose. A book of this sort should be on the shelves of every hospital where mental cases are received, for the information here made easily acceptable is often looked for rather in a haphazard fashion by a new man. The word lunacy, and the various tables, forms and documents given mark the English origin of the volume. An American edition or another book on similar lines would have an increased value in this country. The chapters on the treatment of the insane, emergencies, and special states are concise and clear, but full enough to cover the matters of consequence. Reading these will give an idea of the problems that belong with institutional care, and also certain suggestions that may be of service in private practice.

GULICK

The Anatomy of the Nervous System from the standpoint of development and function. By Stephen W. Ranson, M. D., Ph. D., Professor of Anatomy in Northwestern University Medical School, Chicago. Octavo volume of 395 pages with 260 illustrations some of them in colors. Philadelphia and London: W. B. Saunders Company, 1920. Cloth, $6.50 net.

Both the specialist and the man in general practice will find an interest in this work. A better correlation of the different neurologic subjects is helped, and it can be expected that the one who uses this text will advance his understanding of the functional value of the nervous system in its relation to the different parts of the body. This appreciation must also carry into various departments of medicine, which too often are allowed to seem apart from one another. In this connection the last chapter, which takes up the sympathetic nervous system from a dynamic point of view, deserves special mention. The author is to be congratulated on his presentation of a complex subject, and the publishers on the structure and appearance of the book itself.

GULICK

The Eye, Ear, Nose and Throat. The Practical Medicine Series. Edited by Casey A. Wood, C M., M. D. D. C. L.; Albert H. Andrews, M. D.; George E. Shambaugh, M. D. 392 pp. $1.75. The Year Book Publisher, Chicago, 1921.

This volume, complete on the subject of the title for the year prior to its publication, is neatly bound, well printed and illustrated. Over 200 pages are devoted to the subject of the Eye,

BANNING SANATORIUM

For the Treatment of Tuberculosis

Banning, California, on the Southern Pacific R. R., 90 miles southeast of Los Angeles, lies upon the east slope of San Gorgonio Pass, six miles below the summit and fifteen miles above the Desert, at an altitude of 2300 feet. The mountains rise to a height of ten to twelve thousand feet on either side of the Pass. Southern California is characterized by marked differences of climate, often within short distances. Because of its peculiar situation Banning combines in the greatest measure the best climatic advantages of Southern California with those of Arizona, and is particularly adapted to patients who suffer from throat and lung diseases.

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and it is a credit to its editors, Covering in a terse and interesting way the important achievements recorded in the literature on the Eye for 1920. Sixty-five pages are devoted to the Ear by Andrews, and the remainder of the volume is given over to the nose and throat under the editorship of its able author, Shambaugh. Although this series is primarily for the general practitioner, it is by far the best of its kind and is worthy the conscientious attention of the men who specialize. CHASE

Acute Epidemic Encephalitis. (Lethargic Encephalitis). An Investigation by the Association for Research in Nervous and Mental Diseases. 258 pp. $2.50. P. B. Hoeber, New York, 1921.

This is the most complete and up-to-date publication on the subject of lethargic encephalitis which has been published. It comprises the report of the papers and discussion of the association which made a special investigation on this disease. It furnishes very interesting and attractive reading. The committee includes many of the best known authorities in mental and nervous diseases. Each writer presents a report on some phase of the disease which is followed by questions and discussions by other members of the committee. Each aspect of this disease is considered, including symptomology, diagnosis, morbid anatomy and bacteriologic and animal experimentation. One can here obtain the most complete available information upon this subject. SMITH

The Surgical Clinics of North America (Issued serially, one number every other month) Vol. I No. 4 (Boston Number). Vol. I, No. 5 (The Mayo Clinic Number) 296 pages, with 163 illustrations. Per clinic year (February 1921 to December 1921). Paper $12.00 net; Cloth $16.00 net. Philadelphia and London: W. B. Saunders Company.

Local anesthesia has a prominent place in the articles of this number and operations with its use on the stomach and appendix are described by Bevan. Kanavel reports a case of spleenectomy under novocain, and Ochsner and Nuzum have an extensive article on its use in goiter. Tumors of the large bowel are treated by Carl S. Davis, who presents a group of clinical cases, and David C. Straus has an excellent article on amputation of the thigh with demonstration of cases. There are numerous other conditions discussed in a similar manner by other contributors.

The Mayo Clinic number is very interesting and instructive. It contains twenty-two papers by nearly as many members of the Mayo surgical staff. A large number of subjects are considered, including lesions of the stomach and intestinal tract, bladder, brain, thorax, pericardium and bones. The many illustrations add to the clarity of the text. FORBES

The Medical Clinics of North America Volume V Number 2 (The Mayo Number, September 1921) Octavo of 317 pages, 80 illustrations. Philadelphia and London: W. B. Saunders Company, 1921. Published Bi-Monthly. Price per Clinic year: Paper, $12.00. Cloth, $16.00.

This Mayo Clinic number contains twenty-one papers and reports of cases by members of the medical staff. They are full of interest, dealing with conditions that are encountered by every practitioner, while others present conditions seldom seen in ordinary practice. Conditions reported include nephritis, pneumothorax, cancer of the lung, cardiospasm, angina pectoris, diabetes, dysmenorrhea and other diseased conditions. It is a profitable volume for reading and study.

An Introduction to Bacteriology For Nurses. By Henry W. Carey, A. B., M. D. Assistant Bacteriologist Bendor Hygienic Laboratory, Albany, N. Y. (1901-3), etc. Second revised edition. 149 pp. $1.25. F. A. Davis Company, Philadelphia, 1920.

The duties of a nurse require some knowledge of bacteriology. The basis of this book is lecture notes used by the author in teaching nurses of a training school. It does not go minutely into the practice of bacteriology, but it describes the ordinary bacteria of disease, with instruction concerning sterilization and the problem of guarding against bacterial infection. It is a valuable volume for nurses. SMITH

Chemical Reactions and Their Equations. A Guide and Reference Book for Students of Chemistry. By Ingo W. D. Hackh, Ph. C., A. B. Professor of Biochemistry, College of Physicians and Surgeons, San Francisco. 138 pp. 1.75. P. Blakiston's Son and Company, Philadelphia, 1921.

The purpose of this book is to give instruction to students of chemistry in the principles of balancing chemical equations. This is one of the puzzling problems encountered by every student of chemistry. This little volume will furnish needed instruction in the consideration of chemical equations from a technical and arithmetical standpoint.

Practice of Medicine. A Manual for Students and Practitioners. By Hughes Dayton, M. D. New York. Fourth Revised Edition. 328 pp. $2.25. Lea & Febiger, Philadelphia, and New York, 1921.

This volume presents an epitome of the diseases which are encountered in the ordinary practice of medicine. It is not an extensive digest on any one subject but includes the essential features in compact space. Symptoms, diagnosis and treatment are offered, presenting ready reference for easy investigation.

Correction of Congenital Cleft Palate and Harelip. The surgical treatment of congenital cleft of the hard palate, extending through the ridge and associated with harelip, Frederick B. Moorehead, Chicago (*Journal A. M. A.*, Dec. 17, 1921), insists should be undertaken at the earliest age consistent with the child's physical condition. In normal cases of development, this is from six to ten weeks after birth. The first and one of the major problems is that of feeding. Every baby with cleft palate and harelip is first of all a medical case.

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ORIGINAL CONTRIBUTIONS

THE TREATMENT OF BRACHIAL PLEXUS INJURIES

ALFRED W. ADSON, M. D.
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Section on Neurologic Surgery, Mayo Clinic.

The treatment of brachial plexus injuries depends on the type of injury and the degree of paralysis. Since some injuries involve the upper roots of the brachial plexus and others the lower roots and, since some are slight and recover and others are so severe that they do not yield to surgical treatment, I shall attempt to classify them according to the pathologic condition, and discuss the treatment and prognosis.

A review of the literature reveals two distinct views concerning the etiology of brachial plexus paralysis, that the injury is primarily of the brachial plexus, and that the injury is primarily of the shoulder joint and the brachial paralysis a subsequent result. Duchenne, in 1872, was the first to call attention to obstetric birth palsy. He described paralysis in the newborn, with involvement of the fifth and sixth cervical roots. Erb, in 1874, described paralysis of the brachial plexus, traumatic in origin, which he stated was identical with the obstetric birth palsy of Duchenne, a lesion of the fifth and sixth cervical roots. These lesions have been found to coincide with lesions described by Taylor and Casamajor, in 1913, and by Thomas, in 1914, except that the paralysis was primarily complete, the arm hanging flaccid and then improving with a residual involvement of the fifth and sixth vervical roots. Taylor and Thomas are the two principal exponents of the opposite views, having presented numerous articles on the subject. Taylor and Casamajor, in 1913, reported six cases, in which the paralysis followed separation of the upper roots. The laceration occurred from the fifth cervical downward. The first structure to tear was the cervical fascia in front of the cervical root, next the nerve sheaths, the nerve itself, and the blood vessels, which produced hematomas, followed by inflammatory reaction and scar tissue. Five patients were operated on with not very encouraging results. Besides removal of the scar tissue, end-to-end anastomosis or lateral anastomosis and nerve bridging was advised. The two latter procedures have not been associated with very satisfactory results in the repair of peripheral nerves. Taylor, in 1913, reported a series of cases and stated that intraspinal injuries and injuries to the roots close to the intervertebral foramanina are difficult to treat, and that very little is accomplished surgically. He believes that the subluxation which occurs is the result of an infantile condition of the clavicle, scapula and humerus. He believes also that a marked traumatic neuritis occurs as the result of the injury, which is aggravated by massage and passive motion and, as even the operative results are not extremely gratifying, surgical treatment offers the greatest aid. In 1920, he stated that patients with obstetric birth palsy seldom recover perfectly, as the pediatrician and the neurologist maintain, and that, while surgical treatment is advantageous and offers some improvement, too much should not be expected of it except in the occasional case. Spontaneous recovery, he believes, does not occur after three months. He reported having operated on seventy patients, with only three deaths, and of having seen in consultation 130 other brachial injuries of the nonoperative type. Of this entire group of 200 patients only ten were under two months of age.

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*Read before the Twenty-ninth Annual Meeting of Idaho State Medical Association, Twin Falls, Idaho, Oct. 6-7, 1921.

October 3, 1910, Thomas presented a paper before the Philadelphia Academy of Surgery on the laceration of the axillary portion of the capsule of the shoulder joint as a factor in the etiology of traumatic combined paralysis of the upper extremity. He attributed the cause of obstetric palsy to the influence of scar tissue, following effusion of blood and synovial fluid from a lacerated capsule of the shoulder joint with subluxation. In 1916, he stated that the general surgeon usually ascribes the lesion to an injury of the brachial plexus, ignoring the ankylosis and pain at the shoulder. He refers to Duchenne's article, in 1861, in which four cases were reported of posterior subluxation of the shoulder and internal rotation, with paralysis. In a third edition of Duchenne's article four additional subluxations were reported, with the statement that possibly others had been overlooked. Thomas states that, if a palsy is the result of an injury in the region of the shoulder and is associated with ankylosis of the shoulder joint, it disappears with the restoration of normal motion to the shoulder joint, thus indicating that the injury to the plexus must be due to an injury to the joint. He also states that, if there is no displacement in the shoulder joint, a perfect recovery will take place with the aid of exercise. In chronic cases posterior subluxation with internal rotation is usually found, for which he suggests reduction of the shoulder joint by manipulation, if possible, otherwise by operative treatment with abduction of the arm.

In 1917, he again emphasized that brachial paralysis, in most instances, is secondary to joint injury, and that it disappears with recovery of the joint. He also stated that nerve lesions with stiff and painful joints recover without surgery, and that repair of the flail joint and the reduction of the dislocation places the lesion in the former group in which recovery takes place. In 1920, he reported eighteen cases of injury of the shoulder, in twelve of which operation was performed. In nine patients the paralysis disappeared, in two it was improved moderately; one of the patients died. In 1914, he had reported forty-four birth palsies as "pseudo-birth palsies." He still adheres to his original contentions and emphasizes pathognomonic signs of subluxation: "On the normal side the upper end of the humerus projects a variable distance in front of the anterior edge of the acromion. On the side of subluxation it cannot be felt from in front and by careful palpation with the finger the anterior edge of the acromion can be located a considerable distance below its normal level. On the normal side there is a hollow under the posterior border of the acromion; on the affected side, a prominence."

It is of interest to note that Shultz, in 1908, reported fifty-four uncomplicated cases of dislocation of the shoulder, in which brachial paralysis developed in varying degrees in 76 per cent of the patients. In none of these instances was there a brachial nerve complication at the time of injury; the lesions all developed subsequently. This fact is not in accord with the development of symptoms in classic obstetric birth palsy or in brachial plexus injuries, when the paralysis is frequently complete for several weeks and then improves and is limited to certain roots.

Fieux found, experimentally, that he was able to tear the brachial roots by forcible separation of the head and shoulder in the cadaver. Delvert and Cauchoix reviewed thirty-five cases of injury to the brachial plexus, from surgical and necropsy findings, and in none was a distinct rupture found; in every instance the blood had extravasated and inflammatory and cicatrical tissues were found. Taylor made twenty dissections of ten infants, from three to ten days after injury, and found that tension was the only contributory factor in the production of the lesion. Thomas applied forceps to the cadavers of six infants, using great force while holding the body firmly, and was unable to rupture the brachial plexus by traction on the head with the forceps. All of the brachial plexuses were dissected after the tension had been applied.

It is evident from the foregoing data that injuries in obstetric birth palsy involve the fifth and sixth roots more frequently than the other roots, that the injuries are very slight in some cases and that rarely, if ever, is the root completely lacerated. Examination of the plexus soon after birth reveals little that is abnormal, but if examined after several months a mass of scar tissue is often found close to the roots, sometimes with involvement of the roots. The scar tissue thus remote from the shoulder and axilla indicates its development as a result of injury to the cervical fascia, epineurium, and perineurium, and to the rupturing of the blood vessels and fasciculi. Many dislocations in chronic birth palsy no doubt are the subsequent result of the infantile development of the shoulder joint.

DISCUSSION OF CASES

Forty-five patients suffering from birth palsy have been examined at the Mayo Clinic, in addition to fifty-six patients suffering from brachial paralysis due to injuries other than at the time of birth. The forty-five patients suffering from birth palsy were divided into three groups: (1) those under two years of age, (2) those between the ages of two and five years, and (3) those between the ages of five and thirty-five years. The patients were grouped for the purpose of ascertaining the prognosis in nonoperative birth palsies.

While birth palsy has been known to occur in normal and easy labor, it is more generally the result of prolonged and difficult labor, the principal factor in its production being severe traction on the head before the shoulders become moulded into the true pelvis. This is borne out by the fact that 73 per cent of our group of birth palsies are associated with forceps delivery.

Ordinary care was used in all of the cases; except in a few instances special massage and exercise were given. A Seever operation was performed on one patient. Recovery to some degree occurred in practically every case. In the patients under two years there was approximately one-third return of function; in those under five years approximately one-half return of function, and in those over five years the improvement progressed to approximately two-thirds normal function. In a number of cases the arm was somewhat shorter and atrophied, but it had become useful, altho the movements were not smooth and regular. The greatest amount of recovery is experienced during the first three months, of course; however, in some instances improvement has continued over a period of twelve years.

Thomas believes that injuries to the capsule of the shoulder with a resultant axillary inflammation are the principal factors in the production of brachial palsy. Taylor holds that dislocations of the shoulder are a subsequent result of active muscles over paralyzed muscles, the failure of development of the head of the humerus, and lack of sufficient exercise.

In our series of forty-five birth palsies, only one to fourteen patients under two years of age had a shoulder dislocation; five of the ten patients between the ages of two and five, and twelve of the twenty-one patients over five years had dislocations. In a certain group of patients the increase of frequency of dislocation of the shoulder with advancing age is indicative of the development of the dislocation after birth rather than during birth. I believe that there are more true neurologic lesions, varying from laceration of the cervical fascia around the nerve trunks to stretching of the fasciculi and partial or complete laceration of the nerve fibers, than there are brachial plexus injuries due to effusion and axillary inflammation which is the result of a laceration of the capsule and dislocation. However, I believe that a certain group of palsies due to lacerations of the capsule of the shoulder with effusion and axillary inflammation is improved by surgical reduction of the dislocation, as suggested by Thomas, but this group consists of a milder type of palsy, since the injury in severe brachial palsy is situated close to the intervertebral foramen. This fact has been borne out by surgical exploration, and has been verified by Taylor in his necropsv findings. In my own experimental work artificially produced injuries were situated within 3 cm. of the intervertebral foramen, unless there was equal distribution of pull over all the roots of the brachial plexus; in this group the laceration occurred in the axilla and produced an elongated tear, the fibers breaking at various levels over a distance of 12 cm. When the laceration became complete, the nerve cords were a mass of shreds, and obviously did not lend themselves readily to neurologic surgery.

FIFTY-SIX NONOBSTETRIC BIRTH PALSIES DUE TO BRACHIAL PLEXUS INJURIES

The result of trauma to the shoulder and neck without fracture or dislocation (fourteen treated medically, nine operated on)	23
The result of trauma to the shoulder and neck associated with fracture of the clavicle or humerus (two treated medically, five operated on)	7
Associated with dislocation of the clavicle or humerus, treated medically	5
The result of belt injuries (seven treated medically, six operated on)	13
The result of gunshot wounds (four treated medically, three operated on)	7
The result of stab wounds (operated on)	1

In two of the patients the upper trunk was involved, in three the middle trunk, in one the lower trunk, in nine the upper and middle trunks, in three the middle and lower trunks, and in thirty-eight the entire plexus, either partial or complete. The injury was on the right side in thirty-three and on the left in twenty-three.

At the time of examination the average duration of symptoms was six months.

TYPE OF OPERATION

Six were nerve sutures, one a Seever operation, two reductions of the shoulder, one reduction of the radius, one neurolysis, and sixteen were explorations of the brachial plexus when nerve anastomosis was impossible because of laceration of the root so close to the intervertebral foramen that sufficient scar tissue could not be removed to expose normal fibers, or because of evulsion, or because the extensive scar tissue and associated interstitial neuritis made the procedure inadvisable.

Seven of the twenty-three patients, whose injuries were the result of trauma of the shoulder without fracture or dislocation, were operated on for complete involvement of all trunks, five were explored with resultant failures. In two the nerves were sutured, with resultant failures; in one patient, with a partial involvement and an internal rotation of the arm, a Seever operation was performed with approximately 50 per cent improvement. In this group there was one upper trunk involvement, and one upper and middle trunk involvement; both were explored, the scar tissue was removed, and approximately 25 per cent return of function occurred.

In the group of seven patients whose injuries were the result of trauma and fracture three were explored with slight improvement, approximately 25 per cent return of function. One patient had middle and upper trunk involvement, and a neurolysis was performed with moderate improvement, approximately 40 per cent return of function. One with middle and lower trunk involvement was explored with a complete failure.

Of the thirteen patients with belt injuries, five were explored; in three all the roots were involved, in one the upper and middle roots, and in one the middle and lower roots, all with failures. The patient with the lower and middle root involvement also had a dislocated radius; this was reduced, and, by the aid of massage and exercise, a slight return of function was obtained, approximately 25 per cent.

Three of the seven patients with gun shot wound injuries were operated on. In one instance all the trunks had been partially or totally severed, and a marked interstitial neuritis had resulted. The anastomosis failed. One upper trunk was sutured with 75 per cent return of function. In one case of middle and lower root involvement nerve suture resulted in 50 per cent return of function. This patient had also an arteriovenous aneurysm which was operated on.

The patient with the stab wound had motor impairment in all cords. Exploration and nerve suture resulted in approximately 50 per cent return of function. Thus sixteen patients underwent exploration, of which eleven were failures and five patients were slightly improved, possibly 25 per cent. Neurolysis in one patient resulted in approximately 40 per cent recovery. Nerve suture in six patients resulted in three failures: improvement occurred in three, whose injuries were the result of gunshot and stab wounds. That the operability of these lesions is similar to that of lesions of peripheral nerves elsewhere in the body is hereby emphasized.

Fourteen of the twenty-five operations were failures; eleven patients were improved to approximately 40 per cent function. However, the improvements should not be ascribed entirely to the surgical treatment, since some return of function would have occurred without such interference.

In fourteen patients with injuries the result of trauma to the shoulder and neck without fracture or dislocation, who were not operated on, there was an average of 45 per cent of function. In the group of seven patients the two not operated on had approximately 25 per cent return of function. None of the group of five patients was operated on; two had approximately 75 per cent return of function; three had no return of function. In the group of thirteen patients seven were not operated on; one did not have return of function, and six had approximately 37 per cent return. Four of the group of seven patients with gunshot wounds were not operated on; two had approximately 75 per cent improvement; the results in two were not reported.

Thirty-two patients were not operated on; four failed to obtain function. No information was obtained from two, and twenty-six had approximately 45 per cent return of function. Twenty-four patients were operated on; fourteen of these did not obtain return of function; ten had approximately 34 per cent return. Failure resulted in 12 per cent of the patients not operated on, and in 58 per cent of those operated on. The data obtained reveal that the milder cases improve without interference, and that surgery offers but little in any of the brachial plexus injuries due to the type and position of the injury, except in cases of gunshot and stab wounds in which surgery is of great value.

DISCUSSION

In the treatment of obstetric birth palsy, too great stress cannot be placed on avoidance of injury. The obstetrician should be careful not to apply too severe traction on the forceps in the delivery of the head, nor to apply too severe traction on the body in delivering the head of a breech presentation. When the injury has occurred, the question of immediate surgical treatment must be considered. Taylor advocates its immediate institution but, from my personal observation and study of patients not operated on, I believe that the new fibers should be given an opportunity to return to normal before surgery is resorted to, since spontaneous recovery takes place in many instances. I know of several patients, in whom the extremity was flaccid at the time of birth and who, by the aid of massage and passive motion, made approximately 90 per cent recovery at the end of the first year. By abduction of the arm and external rotation of the hand the stiffness of the shoulder was practically eliminated.

I am not in accord with Thomas' statement that all birth palsies are due to shoulder joint injuries, because experimental work has shown that these lesions occur close to the intervertebral foramen. In some cases, of course, there is a shoulder joint injury and even dislocation, which must be treated. If improvement is very slow, exploration of the brachial plexus is advisable between the ages of six and nine months; it is then necessary to remove scar tissue or resect a portion and make an end-to-end anastomosis. It is important that exercises be employed, such as abducting the arm and externally rotating the palm of the hand.

Treatment of nonobstetric birth palsy depends on the etiology of the injury, hence the value of the history in deciding on the course to follow. Paralysis due to stab wounds should be treated like an injury of the peripheral nerve elsewhere in the body; if the paralysis of any one cord or nerve is complete, exploration of the nerves involved together with end-to-end anastomosis is indicated as soon as the wound is free from infection. If the paralysis is only slight and gradual improvement takes place from day to day, at least six months should elapse before exploration is advised.

Gunshot wounds of the brachial plexus are treated much the same as gunshot wounds elsewhere in the body, except that exploration should be postponed until all infection has cleared up, and until at least nine months have elapsed to allow ample time for regeneration of the slightly injured nerve fibers, since the extravasation of blood and the resultant inflammatory reaction and contraction often produce more extensive paralysis than that produced by the actual severance of the nerve. Not infrequently the paralysis clears up considerably, and the injured nerve trunk or cord can be explored and repaired, preferably by end-to-end anastomosis after resection of the neuromas. The arm should be placed in a position to permit of relaxation of the nerve and, if there is much tension, the application of a plaster of Paris cast to the chest and arm is advisable in order to insure proper immobility.

Injuries of the plexus caused by moderate pull of the arm and hand occur distal to the cords and, if only slight, very little can be accomplished surgically aside from the removal of the scar tissue. If the injury is complete, resection of portions of the nerve on either end is necessary before an end-to-end anastomosis is attempted, since the laceration is an attenuated one, with shredding of the nerve fibers. Paralysis resulting from violent blows on the shoulder and forcible separation of the head, and paralysis resulting from belt injuries or a sudden upward pull of the arm as in falling, vary in degree and, if slight, will show evidence of improvement after three months with the maximum amount of improvement at the end of two years. In severe cases the injury results in either a laceration of the cervical root with or without avulsion of the cervical ganglion, and produces a lesion which is situated adjacent to, if not within, the intervertebral foramen, and not readily amenable to surgical treatment.

In view of the discouraging results obtained by exploration and end-to-end anastomosis of the brachial plexus one should be very cautious in promising relief from surgery If the paralysis is only slight, gentle massage and passive motion should be instituted, and splints or slings applied to keep the arm comfortable. If improvement is slow to occur and there is a question with regard to surgical indications, exploration should be performed not later than nine months after the injury. If the paralysis is complete and the arm hangs absolutely flaccid with complete involvement of all of the brachial roots, exploration of the brachial plexus is optional, since it is doubtful whether anything can be accomplished. Should exploration of the plexus reveal severance of the roots, it may be necessary to amputate the arm, as it is impossible to reattach the roots to the spinal cord.

The value of tendon transplantation and arthrodesis of the wrist or sheath should not be overlooked, as these procedures materially assist in improving the function of the partially recovered extremity.

CONCLUSIONS

1. Injuries of the brachial plexus vary in severity from a slight disturbance to complete paralysis of one or more roots, the result of effusion of blood and synovial fluid, shoulder dislocation, fractures, gunshot and stab wounds, stretching of nerves, laceration, and evulsion of the roots.

2. Treatment depends on the cause and degree of the injury. No one method, either medical or orthopedic, should be used as a panacea for all brachial plexus injuries.

3. Since many of the injuries are slight and a fair degree of recovery takes place following massage and exercise, surgical treatment should not be too hastily instituted but, when needed, should be used to free up constricted nerves and to bring about an end-to-end anastomosis of the severed fibers.

4. Gunshot and stab wounds of the brachial plexus should be treated like peripheral nerve wounds in other parts of the body. Accompanying dislocations or fractures should not be neglected.

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SOME NEWER TENDENCIES IN THERAPEUTICS*

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In presenting my address to you today I must make a confession. If a scientist is wedded to his work, I must admit I am a bigamist. I have become wedded to synthetic pharmacology without ever becoming divorced from my first love of the diseases of the heart; and today I shall take the liberty of speaking to you of some of my favorites among these children of my life work.

First, let me speak of some of the results that have been obtained in synthetic pharmacology. I am sure you all realize that most of our medicines come to us ready made, as excretory products of plants; and most of them, like the alkaloids, have tremendous molecules, in which only a small group or two is responsible for the therapeutic action, and a large part of the rest of the molecule is inactive or toxic; and you will also realize that it would be a great advantage, if substances could be found or synthesized, whose molecules contained only the groups that were necessary for the therapeutic action and left the other groups in the discard.

It was, therefore, a tremendous advance when David Macht demonstrated that both the local anesthetic and the antispasmodic action of papaverin, one of the opium alkaloids, was due entirely to a small and simple part of its molecule, the benzyl group ($C_2H_5CH_2$), and that the local anesthetic portion could be simulated by benzyl alcohol and the antispasmodic action by benzyl benzoate and other benzyl esters. Moreover, he found that these drugs are of really practical importance in therapy. He found that benzyl alcohol in 2 per cent solution could be used for local anesthesia in surgery and for treating the gums and teeth in painful dental conditions. On the other hand, benzyl benzoate can be used for the relief of all the conditions in which there is spasm or over-contraction of the smooth muscles, such as bronchial asthma, cardioispasm, diarrheas, dysentery (Haugwout), intestinal and to lesser extent biliary and renal colic and dysmenorrhea; and Macht states that it also lowers the blood pressure and can be used in the treatment of hypertension.

I may say that I cannot agree with the recent editorial criticism of Macht's work which has appeared in the *Journal of the American Medical Association,* founded upon the work of Mason and Pieck, for the latter observers produced spasm of bronchi, intestines and uterus with agents which stimulated the smooth muscle directly, whereas benzyl benzoate acts best in cases where the spasm is due to overstimulation of the nervous mechanism. On the other hand, in our experiments in our own laboratory we have found that intravenous injections of emulsions of benzyl benzoate promptly stopped the visible peristalis of the intestine in rabbits and caused the contracted intestinal segments to relax. Clinically, Litzenberg has found in a very large series of women that dysmenorrhea is usually relieved by the administration of several doses of 15 minims of benzyl benzoate, if the dysmenorrhea is due to spasm of the uterine muscle, but not, if it is associated with organic lesions of the genital tract.

It seemed interesting to me to determine whether benzyl alcohol represented the best of the series of aromatic alcohols, or whether other members of the series might be better. After investigating a large number of members of this series, we have found that saligenin (salicyl alcohol) seems to be distinctly the best local anesthetic; and that in 2 or 4 per cent solution it is a practical anesthetic for surgical purposes, at least for infiltration anesthesia in minor, and in major operations even in thyroidectomies and laparectomies. It also seems to be particularly useful for the male and female urethra for cystoscopy. Four per cent solutions are satisfactory for the female urethra (Hirschfelder and Wynne). In the male four per cent may suffice, but eight per cent seems uniformly satisfactory (Hirschfelder, Wethal and Thomas). This is particularly important on account of the fact that, like benzyl alcohol, saligenin is extremely nontoxic, about twice the toxicity of aspirin, so that danger from absorption of the drug is practically eliminated.

In the form of ointments it is very useful in such conditions as pruritus, split nipples, tuberculous and other ulcers, and suppositories made up with cocoa butter may cause great relief from the pains of hemorrhoids or in the weeks following operations for the relief of hemorrhoids.

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* Read before King County Medical Society, Seattle, Wash., Aug. 25, 1921.

In some cases spraying the posterior pharynx with a four per cent suspension of the drug in olive oil will greatly relieve a troublesome pharyngeal cough (Huenekens.)

On the other hand, we have made a mercury derivative of saligenin which is about as strong an antiseptic as bichloride of mercury, but is much less irritating to mucous membranes, so that one to 1,000 solution can be held in the anterior urethra for five minutes without irritation and 1:10,000 in the bladder and posterior urethra without causing irritation (Hirschfelder, Hart and Kucera). It is quite satisfactory for the treatment of anterior urethritis and seems to be doing well also in posterior urethritis, and particularly in cystitis, if we can judge from a few cases.

So much for some of the investigations. I should now like to pass from the chemical phase of my bigamy to the clinical, and speak to you of some of the older and riper children of my interest, the children of the heart. Before doing so, I wish to appear before you as a sinning fellow clinician and admit the same error myself, against which I am about to enter a plea.

A few months ago I was having lunch with a railroad engineer and he paid a compliment to one of the internists of Minneapolis which most of us would like to take for ourselves. He said, "Doctor——— is a wonderful diagnostician." I said, "Yes, and he is also a good actor. If I should say, 'You are a fine engineer, you are a wonderful surveyor," would you consider it a compliment?" He said, "No, I certainly should not." "Could you build a bridge without a survey?" He answered, "Of course not, but the survey does not get the bridge across." "Neither does the diagnosis cure the patient."

Too many of us stop at the diagnosis which is only the survey, without building the bridge of scientific therapeutics. Now it is a peculiar fact that this most practical phase of practice is the one most neglected by the most practical men, and it is most surprising that the most practical men will always spend hours of time over a diagnosis procedure to determine a fraction of a milligram of a substance in the blood, but will rarely devote half an hour to observing just in what way their treatment is working at all. And, on the other hand, they will take up any observation on a dog or rabbit that is reported by some pedagogue in a laboratory thousands of miles away and apply that for years upon his patients, without ever taking stock to see just what results he has gotten on any ten consecutive cases of his own.

How many of you have ever looked over only a few of your own cases to see to what extent the pulse rate, blood pressure or respiration has been changed by strychnine, or in pneumonia by digitalis? Most of us practice for our entire lives on the memories of a striking result in the case of John Smith or Tom Jones, without ever doing a little bookkeeping to tabulate the average results of our experience or the usual ranges of variations. Most of us, after our five minute visits, never know whether any drug effect took place in half an hour, in one hour, in two hours—simple changes that any nurse could record, such as respiration, pulse rate, rhythm and size, and above all that most important and delicate index, the general feeling, comfort and appearance of the patient. Most of us prescribe the dose that we have been told to prescribe by our teachers and *assume* that we see the effects that we expect to find.

This is well typified by the use of strychnine in America and of camphor in Germany, as circulatory stimulants. Most of the text-books of pharmacology state and give tracings to show that both these drugs cause rises of blood pressure in animals, but they do not take into account the dose. As a matter of fact, if you inject intravenously into a dog or a rabbit a dose which would be equivalent to a tenth of a grain of strychnine injected into a man, you get no increase in blood pressure, and the same is true, if you inject a dose of camphor equivalent to five grains injected into a man. And that is what we find quite uniformly in man. Injection of strychnine is not followed by a rise of blood pressure or a change in blood pressure or a slowing of respiration, as was shown by Richard Cabot in three thousand observations fifteen years ago. Our routine class experiments on our medical students bear this out. In one instance a student voluntarily took two-tenths of a grain doses hypodermically within three quarters of an hour. He had no change whatever in respiration, maximal or minimal blood pressure, or pulse rate, even tho the calves of his legs became spastic and the muscles of his neck were for a few minutes a good deal stiffer than I liked to see. But he did have a most striking feeling of well being, like a caffeine of a cocaine effect, so that strychnine may perhaps be more of a psychic than a circulatory stimulant.

Similarly, a group of our students studied the effects of several grain doses of camphor hypodermically on themselves, both under normal circumstances and after first lowering their blood pressures by means of sodium nitrate. In no instance was there any sign of circulatory stimulation. Of course, the mere prick of the hypo needle, like any other pain sensation, will in some cases cause momentary rise of blood pressure, amounting to five or ten millimeters of mercury. Seventeen years ago I had one of my students in San Francisco test the effect of merely pinching the ears of a series of convalescent patients. In most of the sthenic types it caused a rise of about ten millimeters, lasting about five minutes; in most of the asthenic it caused a fall of about the same degree. Any hypodermic injection will have about the same effect, and this might easily be ascribed to the medicine.

Many of our supposed effects are due directly to stimulation arising in the mind of the patient himself. In some of our class experiments in pharmacology at Minnesota, when we give one student a twentieth of a grain of strychnine and his partner a grain of quinine (neither of them knowing which is which), we often find that the man who got the quinine, but expected the strychnine, has the increased knee jerk and the man with the strychnine has none.

The proper dose for any patient is the dose that produces the physiologic effect of the drug. It is rarely alike in three consecutive cases. How many of us reach it in each, or stop before we get a toxic effect? In other words, how many of us observe, or have observations enough made for us, to really know what we are doing in the treatment of our patients?

The few who do so are too modest to publish such commonplace but extremely rare things as the facts and figures of every day experience, dealing with the effects of common drugs upon human beings, which are the commonest, cheapest and most interesting of the laboratory animals! When we teachers of pharmacology talk to our students about the effects of drugs on dogs or cats or rabbits, it is easy enough for us to find exact records, but when we come to talk about just how much, and just how little, these same drugs effect human beings, we can usually search the Surgeon General's Catalogue and the Index Medicus in vain without finding any data, whatsoever.

This year the American pediatricians have suddenly waked up to this fact, and have appointed a committee, upon which I have the pleasure of serving, to collect data as to doses and effects of the common drugs upon children. They have just recognized that they have all along been working in the dark. When will we internists do so?

And so my first plea to you is for a few published statistics on ten or twenty of your cases with each of the common drugs, to lead us out of the darkness, not of theapeutic nihilism, but of therapeutic indifference.

The second plea that I would like to make to you is for a more clear-cut target in your therapeutics. Too often a perfectly good drug is used at the wrong time, at a time when it may be useless or even do harm, simply because a careful survey was not taken beforehand. Thus, as Mackenzie has shown, digitalis does not exert its favorable action upon heart muscle that has been poisoned by chemical poisons or bacterial toxins, especially upon the fibrile heart. Still further, Drs. Bicek, Kucera and I have found that, when cats were given a high fever, digitalis became three times as toxic as at normal temperatures. This is in harmony with the findings of T. Stuart Hart in influenzal pneumonia. In almost 500 cases he found that digitalis did not slow or strengthen the heart at all, unless there was auricular fibrillation; and, on the other hand, toxic effects such as partial heart-block and nausea set in after a total amount of about three drachms of the tincture had been given; in other words, at half the amount at which such symtoms usually set in in normal individuals.

Moreover, we must remember that in influenzal pneumonia the cyanosis is not due to heart failure but is produced in much the same way as is the cyanosis of congenital heart disease, by the entrance of unaerated blood into the left side of the heart. W. C. Stadie has shown that, whereas in ordinary lobar pneumonia very little blood flows thru the consolidated area, owing to increased resistance, and most of the blood flows thru the normal parts of the lung where it is well oxidized, in influenzal pneumonia there is little resistance to the blood flow thru the consolidated area. So the blood flows thru it without being oxidized, and thus enters the left auricle, where it is mixed with aerated blood; and so a mixture of blue and of red blood is pumped to the tissues. The cyanosis here is not an expression of heart failure, as it is in the ordinary lobar pneumonia. It is merely an expression of the kind of mixed blood which is coming into the heart from the lungs. Unfortunately, no treatment can alter this mixture. The heart itself is not failing, in spite of the cyanosis and therefore had better be left alone.

In lobar pneumonia, on the other hand, the consolidated area in the lung offers a real obstruction to the flow of blood thru it. When cyanosis sets in, it is a sign that the right heart has dilated under the strain. The best treatment here is a free venesection, in order to lower the pressure in the veins and on the right side of the heart. The bleeding should be done by a large free incision thru the vein, in order to let the blood out rapidly and not by the slower method of removing the blood slowly thru a needle. The reason for this is that a quick removal of a moderate amount, say half a pint, of blood causes a rapid depletion of the overloaded venous system and enables the overstretched right auricle and ventricle to return more nearly to their normal size, at which they contract to better mechanical advantage. When the same amount of blood is removed slowly instead of rapidly, the dilation of the veins and of the right heart is not relieved to the same extent and, therefore, tho the same degree of anemia is produced, the heart is not relieved to the same degree.

It can be readily shown on animals that the action of digitalis on the heart muscle is greatest on an unpoisoned normal heart muscle which is overstretched mechanically, as is the case in the heart failures of the chronic valvular diseases. Here digitalis tends to shorten the overstretched fibres and to strengthen their contraction and this is particularly valuable in those periods of mitral and tricuspid insufficiencies, in which, thru the factors which have induced the heart failure, the bands of muscle around the mitral and tricuspid orifices have become overstretched. This leads to a purely functional widening of the orifices and a much greater leakage. It may be superposed upon the smaller leakage that is the result of the ordinary valvular lesion. If we can strengthen the muscle fibers so that their stronger contractions again narrow down to mitral and tricuspid rings, we can relieve a great part of the leakage and very often restore the heart to useful function.

Time does not permit of a systematic discussion of the use of drugs in cardiac diseases, and I shall now pass on to a few points in the purely physiologic therapeutics of the heart. The first point that I wish to bring before you in this connection is absolute need of suiting the patient's exertion to his ability. Very often this can be done by getting him merely to alter the speed of his actions without altering their character. Thus a great deal of energy is expended in fast and excited speaking and, if one can merely cultivate in the patient the habit of speaking slowly, a great deal of waste of energy and particularly of that sudden waste of energy which wears out a heart can be saved. Many minor movements, such as getting up out of a chair quickly, impose undue exertion upon the heart and set it off into rapid beating and palpitation, which is not the case if the patient gets up out of his chair slowly and gradually. Of course, the greatest trouble is experienced by the cardiac patient on climbing hills and stairs, and here most of all it is possible to obtain a simple regulation of his exertion.

My attention was called to this by my wife some years ago, while we were climbing mountains in California. She called my attention to the fact that, if she took a breath every time she put down one foot, she could climb at a more rapid pace without feeling the effects of the exertion. I have applied this method since then to a good many heart patients, and have found that, if they simply follow the rule of taking a deep breath every time they put down their left foot while climbing hills or stairs, most cardiac patients can then do these things without dyspnea or palpitation. If, on the other hand, they will still have these symptoms they can usually avoid them by taking a deep breath whenever they put down either foot. The reason for the success of this maneuver lies in the fact that the patient is made to suit his exertion to his cardiac capacity, because the speed at which he moves becomes then a function of his own shortness of breath. Moreover, Lyon has shown that in fishes the pulse rate is regulated by the respiration and to a slight degree there is some relation between these two functions in mammals and in human beings.

In closing, I would like to say a word about a method for the resuscitation of the heart in the first moments after it has ceased to beat, a method which has been given casual mention by Crile and Dolley, but has otherwise escaped notice. If one watches the conditions of the exposed dog's heart at the moment of death, one finds that the heart may stop beating in three ways. In the first place, the ventricles may pass at once into a state of fibrillary contractions, incoordinate contractions, when each fiber of the ventricle is contracting independently of the others. Under these conditions the pumping power of the ventricle ceases at once and the animal dies irrevocably. In some animals this does not take place, but the ventricles after the last beat stop dead at once and will no longer respond to mechanical or electrical stimulation. In a third group, however, altho the ventricles suddenly cease to beat, and this occurs whether the auricles continue or not, the ventricles retain for some minutes the power to respond to mechanical stimuli. If one strikes them, they will respond with a strong cardiac contraction. If the stimulus is repeated, they may actually resume rhythmic, forceful contractions and the circulation may be resumed at least for a time. It is not necessary to open the chest in order to produce a stimulation of the ventricles sufficient to bring about such contractions. The same result can be obtained by vigorously pushing the ribs and sternum against the heart and the elasticity of the costal cartilages is sufficient to allow this to be done. I have repeatedly done this in animals and at least for a time resuscitated circulation.

I once tried this maneuver with apparent success upon an old woman whose heart stopped in complete heart-block. She had a convulsion, respiration ceased, and intravenous injection of strophanthin was without effect. To all appearances she seemed to have been dead for about a minute. I then placed one hand behind the left side of her chest, pressed sharply upon the ribs and sternum with the other and then suddenly let go. The heart responded with a vigorous contraction. I repeated the maneuver after a couple of seconds and continued to do so at a rate of about sixty per minute, the heart responding each time with a contraction, and within a minute the circulation was resumed, the patient regained consciousness and lived for a couple of years afterwards.

While one cannot claim that in this case the heart might not have recovered spontaneously, the immediate response was in harmony with the results which I have obtained in animals and so sufficient to show that this simple method is a legitimate one for the resuscitation of some hearts in the first few minutes after they have stopped beating. It is much simpler than the method of performing a laparotomy and massaging the heart across the diaphragm, which has been done by a considerable number of surgeons with a certain percentage of success (Wiart, Kemp and Gardner, V. Cackovic), and I am, therefore, presenting it to you as a method which is worthy of more extended trial.

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HEALTH SUPERVISION OF SCHOOL CHILDREN*

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Not more than a decade ago school inspection meant the cursory examination of the school child in the class room for the purpose of detecting communicable disease, and even this procedure was carried out in only a few of our more important cities. Today this procedure has been revolutionized. Of recent times it has cent of the teachers gave some health instruction, that 32 per cent of these schools were using some sort of health text-book, but less than 2 per been found out that in 4,000 schools 58 per cent had medical inspection.

At the same time the following statistics were made available: At least 5 per cent of the children of the U. S. have now or have had tuberlosis; 25 per cent have defective vision; 25 per cent have diseased tonsils, adnoids, or glandular defects; 50 per cent have defective teeth; 75 per cent have defects which are potentially or actually detrimental to health. These figures are taken from a report of the U. S. Dept. of Education.

Child hygiene, of which school health supervision forms an integral and important part, is the foundation of all public health matters. In all the field of public health activities school hygiene offers the greatest return in the way of health dividends, if placed on a sane and sound basis. It may be stated, however, that there is no program so promising in a prospectus and yet more disappointing in fulfillment than is the school hygiene program.

There are several reasons for this condition. First, health supervision is essentially a community problem or responsibility, and as yet most communities have failed to take cognizance of this fact; second, there is usually lack of central control and lack of inauguration of standardized methods; third, there is uncertainty as to which authority (education or health) should rightly assume the function of health supervision. The responsibility on the first hand is the community's, and it is the duty of proper officials to inaugurate and carry out a systemmatic program. In the second place it is a state problem, that is, the state should act in a stimulative and advisory capacity; and also it is the state's duty to porperly guide the community.

With the time of the opening of schools drawing near, or perhaps already here, it is very desirable that communities and especially the responsible officials should take stock of resources for the health supervision of school children. The health of the growing child determines largely the health status of the adult. Steps should be taken, therefore, to insure future efficiency of its citizens.

Surveys made by the writer in Missouri and studies made in other states of the physical condition of school children, have shown large numbers of them to have physical defects which were previously unrecognized and unsuspected. The greater majority of these defects are preventable and remediable. Failure to correct these defects not only reduces individual efficiency, but in the aggregate it reduces state efficiency. This was clearly demonstrated by the high percentage of draft rejections, in the physical examinaton of men for military service.

Surgeon Taliaferro Clark, a noted authority on school inspection, states that the change of environment of children entering school, the conditions under which they assemble in school and not the school itself are largely responsible for much of the sickness contracted during school life and for the persistence of physical defects. Experience has taught us that failure to prevent and correct the common defects, such as impairment of vision, hearing, teeth, etc., to improve the status of nutrition and to place the child in an environment best suited for physical development, greatly inhibits the efficiency in later adult life in industrial, business and professional vocations. During school life a majority of these defective children are unable to take full advantage of their educational opportunity and, in the same class with normal children, retard and impede the normal as a whole. Being discouraged because they are unable to keep pace with the normal children, they ultimately quit school, poorly prepared for useful citizenship.

Before outlining a system of health supervision, the writer would like to discuss the relative functions of educational and health authority regarding health supervision of the school child. There has, indeed, been much discussion in association meetings, magazine articles, etc. on this most important subject, and many suggestions brought out in an endeavor to define the functions of the two state departments.

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It is natural for the educational authorities to want health supervision as a part of its official duties. It must be acknowledged that much can be said for this plan. In the first place, it is argued that the medical inspection concerns the school child, is carried on in the school room, and to avoid confusion ought to be under the school authorities. Again, it is argued that the school authorities have a full time agent in the person of a superintendent, while the average board of health does not have a full time agent. This is a good argument but is becoming less so as boards of health take their duties more seriously and are taken more seriously by the counties they serve.

On the other hand, much may be said in favor of board of health control. The community interest in the health of the individual centers in the board of health. It is not very logical to single out a few years in the life of an individual and to say that during this time he is to be considered as apart from other human beings younger or older than himself and, therefore, must have his health needs supervised by a separate body. Further objections to physical examination control by the educational authorities, are that the control of communicable disease, an important matter in health supervision, is vested by law in the board of health, and in it alone and, therefore, no responsibility can be justly assumed by the educational authorities on this subject.

Giving due consideration to all arguments pro and con, let us see if we cannot construct a rational program for health supervision of the school child. We shall aim at a goal based on broad lines, the details of which will not be dscussed, as they are too well known.

No real progress can be made in communities without some form of state guidance. This must be differentiated from state control. However, individual iniative must be preserved as far as possible. The question now is, should this state guidance be vested in the state board of health or department of education. It is well to bear in mind the vast difference between physical education and health supervision (or medical examination).

Physical education consists largely of teaching children the simple rules of health and instructs them how to properly exercise, play, eat, breathe and rest, and necessarily should be an important part of the school curriculum. This teaching has and will continue to be supervised by boards of education and the teaching largely performed by a non-medical personnel. Physical education, is however, of the utmost interest to the health authorities, and must be coordinated with the medical examination. Therefore, the guidance of the state policy regarding physical education should be in the hands of the department of education which, however, should consult with the health department with regard to the broad health principles involved. When we come to health supervision, including physical examination as conducted by nurse and physician, matters are reversed, the chief interest and responsibility being vested in the health department, which should consult with the department of education, especially in matters concerning school routine.

The combined functions will have to do with teaching health habits, proper control of school athletics, teaching of school and personal hygiene, sanitary supervision, control of communicable disease, and physical examination for detection of defects. All functions except teaching of health habits, teaching of personal and school hygiene, and supervision of athletics should necessarily be vested in the health department. The above program is not based on theory but has been given actual trial in not a few states, and especially has this program functioned with efficiency in Missouri.

LOCAL ACTIVITIES

What has been said regarding state functions likewise applies to local communities. The local board of education and local health board each has its responsibility for the wellfare of the child of the public school. Altho the employment of personnel is practically in the hands of the school authorities, this does not preclude free cooperation between the school board and local health officer. Particularly in rural countries best results have been obtained by cooperation of the county superintendent and the county health officer.

PERSONNEL

Entire supervision of the child requires a high degree of skill on the part of the teacher, the nurse and medical inspector. The intelligent cooperation of the three is necessary for best results. The fulfillment of these conditions may be found in the usual large city, but in the rural districts such requirements are fulfilled with difficulty. The reasons need not be discussed. Activities for physicians and nurses for school work have large enough scope for full time service, and experience has taught us that the returns from the investment have well justified the expenditure. It has been found that the more regular attendance of children at school brought about by competent full time health supervision and the educational effect on the parents, when applied to such children, reflect in time so advantageously on the community as to more than compensate for the expenditure involved.

REQUIREMENTS OF MEDICAL INSPECTOR

The minimum requests of an accepable school physician are: First, he should devote his full time; second, he should be skilled in medical diagnosis, and be able to assist the family physician when it is desired; third, he should have a working knowledge of laboratory science; fourth, he should have a working knowledge of applied school sanitation; fifth, he should be familiar with suitable health exercises and be able to prescribe these in individual cases, and instruct physical directors as to the best methods for individual cases.

REQUIREMENTS OF THE NURSE

The nurse should likewise be a full-time employee. She should be directly responsible to the physician for the proper discharge of her duties. She should have a thoro training in public health work, with special training in school hygiene. Beside the actual employment in school, her time is required to visit in the community, instructing parents of necessitous children in the care of the sick and prevention of disease. During vacation the nurse can profitably be employed in follow-up work in homes for the correction of physical defects.

CO-OPERATION WITH THE PRACTICING PHYSICIAN

The physical examination of school children, with the attendant detection of remedial defects, will amount to naught without the full cooperation between the vested authorities and the practicing physician. Altho provision may be made whereby necessitous children may receive free treatment of their physical defects, best suited to their needs, the majority of cases will be handled by the family physician or specialist as the case may be. And it has been my experience that in most communities the cooperation between the health and school authorities and medical and dental professions has been so profound that this provision is a problem which causes the school authorities little worry.

Experience has taught us that, where competent medical inspection is in force, it is well for the physician, as a rule, to accept a diagnosis of the medical inspector and encourage the parents to have such defect corrected. In only few instances is a difference of opinion warrantable, for a conscientious medical inspector will in all instances give the child the benefit of the doubt until consultation shall have been had. On account of the confidence which physicians enjoy with their patients, they can be of great aid to the medical inspector in matters of health education among the laity. Thru the interest displayed by the physician in the health campaign, does the success of the project depend.

In many communities, especially the smaller towns, support of a full time medical inspector for the present at least is a question of financial impossibility. Such communities must depend upon the activities of the local physician in his disposition to aid in community welfare. The success for future work depends upon the present closer union between the practicing physician and the vested health authorities. We will accomplish little in Utah, unless physicians are willing to devote a certain amount of their time in voluntary medical examination of school children.

CONCLUSIONS

1. Inasmuch as the state requires compulsory educaction, it is the state's duty to provide ways and means for proper, adequate health supervision.
2. Administration of health matters of school children is essentially the function of health authorities. Administration of physical education and supervision of athletics is the function of the educational department.
3. Efficient supervision calls for skilled personnel in public health and education.
4. Follow-up work in cooperation with the practicing physician is equally important as original investigative procedure, for without the proper repair the defective child cannot compete with his normal fellow.
5. The measure of the mental and physical efficiency of the children of a community is an index to the completeness of the cooperation between the agencies in health supervision.

THE PROBLEMS OF MODERN DIABETIC TREATMENT

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If the treatment of diabetes the country thru could be studied by an omniscient statistician, it is practically certain that present results would not be flattering to the medical profession. This statement would hold true after six years of experience with the undernutrition treatment, recognized as a vast improvement over all preceding methods. On the *general* results of treatment of diabetes the articles of diabetic specialists throw but little light. In such are described the splendid effects of modern dietetic therapy carried out under the best conditions, which unfortunately exist in but a few clinics and are confined to but a small minority of the total cases.

The recent statistics of Joslin indicate that diabetes has ceased to be a rare disease in the United States. Mere reflection, then, makes evident that the vast majority of diabetics are being treated at present by the general internist and the general practitioner. Experience of the profession and the diabetic alike has, however, amply demonstrated that modern diabetic treatment requires special clinical laboratory and dietetic organization beyond that which can be reasonably expected of the general practitioner or internist. It is obvious, then, that the results of diabetic treatment at large cannot be really satisfactory.

An analysis of the most recent 100 cases of diabetics coming under the personal observation of the writer shows 87 per cent who had received previous medical treatment. Of this number, 79 per cent had been treated merely by general qualitative restrictions of diet, but only 21 per cent by accurately weighed diets. It is very likely that statistics of others treating numbers of diabetics would yield similar data. Certainly the geographic location of this group of cases on the Western Coast cannot be urged as nullifying the lesson taught by these statistics, for the patients were treated in the well-known resort cities of Santa Barbara and Los Angeles and are rather representative of the country at large.

Among causes contributing to the poor general results of diabetic treatment is a surprisingly careless attitude on the part of our own profession. Diabetes at the outset is usually slow in development and mild. The patient may only be inconvenienced rather than incapacitated by his malady. This unfortunately encourages a slack attitude toward this grave disease on the part of the careless or imperfectly educated doctor. How easy it is to promise improvement with the aid of the obsolete qualitative diet sheet and how easy it is to satisfy the innocent diabetic layman who is relieved and encouraged to find that "the sugar" has fallen from five to one per cent, or even vanished from the urine by such simple means. A downward course is usually initiated by such a professional procedure, when it might have been possible thru proper treatment to actually arrest the disease at the outset by modern quantitative diabetic therapy and honest instruction of the patient.

When such lax treatment of diabetics arises from professional ignorance, or inability or disinclination upon the part of the patient to follow judicious professional advice, the loss of their precious carbohydrate tolerance by so many diabetics thru such causes can better be tolerated, than the many cases which are permitted for the sake of the professional fee involved to continue this downward course without even the excuse of ignorance on the part of the physician. With the growth of knowledge and attendant technical difficulties of diabetic treatment this disease can no longer be adequately treated by the general practitioner or by the general internist without special organization and experience. It were, indeed, a great step forward, could the profession at large and diabetics as well be brought to thoroly realize that the neglect of painstaking quantitative diabetic methods lead in the long run to a mortality as great as appendicitis without operation, the chief difference lying therein that the results of neglected acute appendicitis are obvious and immediate and those of neglected diabetes delayed and slow. Were the remote but dire consequences of neglected or ignorant treatment of diabetes as obvious to the diabetic as to the patient with an acute appendix, it is likely that more diabetics would benefit by modern diabetic therapy and a number of legitimate malpractice suits be instituted.

The layman, however, does not escape a measure of responsibility for the poor results of treatment. The soul of a man does seem at times to repose in the gastric mucosa and many individuals will neglect treatment, in spite of every known means to educate them to the necessary food restrictions and to lighten the same by excellent diabetic cooking and menus. More frequently the cause of neglected treatment is, however, poor treatment, including unnecessary rigidity in dietetic regimes.

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* Read before the Twenty-seventh Annual Meeting of Utah State Medical Association, Salt Lake City, Utah, Sept. 13-15, 1921.

Still another source of trouble is professional food quacks and unscrupulous commercial diabetic food companies. A few years ago, in New York City, a firm was discovered carrying on an extensive advertising campaign of diabetic foods which by analysis showed carbohydrates present as high as 60 per cent.

ESSENTIALS OF MODERN DIABETIC THERAPY

It may now be well to consider what is demanded of modern diabetic treatment in briefest summary. In all but the very lightest cases a strict quantitative diet must be enforced over a long period; in all severe cases, for the duration of the patient's life. A delicate testing of the reactions of each individual patient to carbohydrates, proteins, fats and total caloric intake is indispensable, with complex variations to overcome acidosis, lower the blood sugar to normal, maintain a nitrogen balance, supply vitamines, overcome loss of body weight, increase or maintain sufficiently the general nutrition, meet individual food idiosyncrasies and, above all, make patient efforts to increase food and carbohydrate tolerance. This absolutely necessitates a complete system of dietetic record which should be sufficiently simple as to be followed by the patient easily. This is absolutely indispensable. As a further criterion the blood sugar in favorable cases, the great majority, should be reduced and held to the normal. The greatest single desideratum of all is, perhaps, the thoro practical instruction of the patient with the aim of his keeping in future sugar-free and in good general condition by a sufficient understanding of diabetic diet.

For the meeting of these exacting necessities of modern diabetic treatment, three requirements are essential. They are (1) a dietetic laboratory, (2) an adequate clinical-chemical laboratory, (3) professional experience, judgment and skill in the treatment of diabetes. The ordinary hospital diet kitchen has in general proven inadequate for the peculiarities of the quantitative diabetic diet. Administrative difficulties nearly always present themselves. There are still few well trained diabetic dietitians. It is usually necessary to develop a small quantitative food laboratory, where special provisions for diabetic cooking are made.

The laboratory facilities necessary for routine diabetic treatment are really not great. The importance of the laboratory has been rather over- than underestimated to the profession. This is perhaps due to the many entirely and partly research studies reported in diabetic literature which frequently necessitated for their carrying out a completely equipped and manned biochemical laboratory. Actually the routine methods absolutely required are but few, the qualitative tests for acetone, diacetic acid and sugar in the urine, quantitative estimation of urine and blood sugar, one accurate method for determination of acidosis, such as the Van Slyke, and the total nitrogen determination in urine. A technician trained in a well-known laboratory can successfully carry out such methods. Many cases require, as a minimum, merely the qualitative urinary tests and an occasional blood glucose determination.

Professional experience and skill in the treatment of diabetes is, of course, an obvious necessity. Diabetes is, however, a disease peculiarly exacting upon professional requirements, so much so that there is at present a lack of physicians with adequate training in diabetes. The ordinary clinical training is unfortunately an imperfect qualification for one having the responsibility of diabetic treatment. In addition to the clinical, is needed an intimate knowledge of food values and practical dietetics and, in addition to the support of an adequate clinical-chemical laboratory, a thoro training in methods of metabolic investigation, in order to develop the necessary critical ability to properly evaluate the laboratory and dietetic data in any given case.

As criteria for modern ditbetic treatment, have been mentioned (1) the need of a dietetic laboratory, (2) adequate clinical-chemical facilities, (3) special professional experience and knowledge. There is still another factor equally important, viz., the smooth coordination and cooperation of the dietitian, chemist and clinician in order that the exacting requirements be met. It is surprising how frequently a lack of balance or cooperation in any of these agencies affects the value of diabetic treatment.

INSTITUTIONAL TREATMENT IN DIABETES

Only twenty-five years ago the alarming increase of pulmonary tuberculosis in the United States led to a state-wide campaign of professional and lay education. The excellent results are common knowledge. Upon the diagnosis of this disease being established it *now* requires no argument for family physician and patient to agree upon the removal of the latter to an institution especially organized and equipped for treatment of tuberculous individuals. Diabetes mellitus is a disease necessitating for its proper care far more special organization than tuberculosis. Earnest and persistent efforts will, however, be needed before a full realization of this fact has become generally apparent to the professional and lay mind and conscience.

THE METABOLISM UNIT IN THE GENERAL HOSPITAL

As a practical step toward the solution of these problems, a metabolism unit should be organized in every general hospital as has already been advocated by the writer. In the erection of a new hospital building much can be accomplished by setting aside a small medical pavilion or wing, provided with a commodious diet kitchen, a chemical and respiratory metabolic laboratory, sick rooms, where metabolism patients can be segregated in numbers, a diabetic class and an outpatient department, with instruction of the poor in diabetic cookery. In every centre of population the profession could aid greatly in the development of such units by encouraging the efforts of one or more of their colleagues to become thereby more especially qualified and equipped in the treatment of this difficult disease. The metabolism unit should be under the complete charge of such a physician. A further step in the development of such a unit is the inauguration of suitably supported metabolic and dietetic research.

It is believed that the earliest example of the embodiment of a metabolism unit in the plans of a general hospital was the metabolic ward of the Montefiore Hospital, New York City, organized by the writer in 1913. Great credit is due the deceased Dr. Nathaniel Bowditch Potter for establishing, in spite of great bodily infirmities, the first metabolism unit on the Western Coast at Santa Barbara in 1918. It is an excellent sign of progress in diseases of metabolism that many hospitals recently built or to be erected are to be provided with a metabolism unit of the nature indicated above.

UNITY IN THE MEDICAL CURRICULUM

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Compared with other institutions of higher learning in the United States, our medical schools began late and have progressed slowly. Harvard College opened its doors in 1630. But up to 1750 medical education was entirely in the hands of private practitioners. There were no schools. There were not even organized courses of lectures. The more fortunate students went abroad for their training. The rest became apprentices to private practitioners. These they assisted in all sorts of ways, sweeping out the office, making pills, attending to minor injuries and dressings, accompanying their preceptor on his rounds and helping him, here to reduce a fracture, there to usher a new infant into the world. It was a rough and ready education. In spare moments the apprentice "read medicine." What medical lore he did not imbibe from books he picked up—if at all—from his preceptor. His training was eminently "practical." He learned how to compound prescriptions but no chemistry. He learned his anatomy directly from his preceptor's patients without preliminary studies in the dissecting room. He got his physiology similarly, the patients serving, in the absence of laboratories, as material for whatever experiments he saw.

There were certain rugged virtues in this manner of education. There were also some very obvious deficiencies. The apprentice system produced many practitioners skillful in the art of their own generation. But it was not designed to promote an understanding of the problems of the next. It accented neither discovery nor prevention of disease. It did little to develop the conception of medicine as a science.

The first medical college in the United States —the College of Philadelphia—was chartered to broaden and systematize the experience of apprentices. Besides lectures in the principles and practice of medicine, some opportunity was afforded for the study of anatomy in conjunction with surgery. The Philadelphia Hospital, among whose founders was Benjamin Franklin, provided clinical material. And Benjamin Rush gave lectures in elementary chemistry.

This new college was supplementary to, not a substitute for the apprentice system. Colleges, chartered subsequently, long followed similar aims. They gave scant attention to the fundamental sciences, even in didactic lectures. They had no laboratories, they did little that would now be recognized as research. Their emphasis in instruction continued to be on clinical work. Their courses were correspondingly brief. For a century two sessions of about six months each were their normal length.

In 1871, Harvard Medical School lengthened the course to three years, introducing more instruction in fundamental science. By the end of another decade, Delafield and Welch had established their pioneer laboratories which soon forced a widespread change in ideals and methods of medical education. The medical curriculum rapidly lengthened thruout the country to three, then to four years, chiefly by the addition of laboratory sciences in the first and second years. These laboratory years have lacked from the beginning the professional aspect of the clinical years, a difference that has increased if anything with the development of the sciences concerned and the idea of prevention, whose growth they stimulated. Tho both have been established for some years in the law of all the states of the union, as necessary parts of an adequate medical course prerequisite to licensure, the historic line of fusion continues to be apparent. In a few schools it marks merely a zone of transition from one aspect of the subject to another. In most it marks differences of viewpoint that continue to afford opportunities for misunderstandings on fundamental educational issues.

The last twenty-five years have seen further additions to the medical curriculum, made, however, under the name of premedical courses in academic institutions. That these additions were not made directly to the definitive medical curriculum was due to the fact that the desired courses were already established in the colleges. It was only necessary to raise the admission requirements by demanding for entrance the completion of one year, or two years, or three, or (as in the case of John Hopkins) four of college work, including certain prescribed subjects, to obtain the desired curriculum without a duplication of expense.

So the premedical course came into existence, administered by a faculty outside the jurisdiction of the medical faculty, removed from it often by wide distances and more or less ignorant of and out of touch with medical problems. Thus was introduced a second rift in the medical curriculum, easily accounted for on historical grounds, among which expediency largely figures, but not demanded in principle nor desirable in itself. The chemistry now pursued by all students of medicine in their premedical years is far broader and deeper and more significant for an adequate conception of human physiology than the elementary courses that were part of the regular medical curriculum within relatively recent times. And the physiologic or biologic chemistry now a part of the standard medical curriculum is found with equal propriety on the academic college campus. The physics and biology, now universally recognized as parts of a medical education, might be studied as well under the medical as the academic faculty which now controls them. Convenience and economy have determined their present location. That is all.

It is our habit to conceive of the four years of medical school as devoted entirely to medical science and practice, unrelieved by humanistic studies. Such a conception, however, is not at all necessary, and there is reason to believe that it may not be desirable. It is largely a product of the fact that medical schools have grown up physically separated from the classrooms and libraries in which humanistic studies are taught. Where departments of medicine share the same campus with the latter, another tradition may prevail. Toronto, for instance, has shown that academic may be pursued alongside of professional studies: mathematics with anatomy, literature with pathology, history with medicine and surgery. It is, in practical terms, a matter of propinquity.

There are manifest advantages in such propinquity, aside from the access it gives medical students to the humanities. They lie in the opportunity for mutual helpfulness of the fundamental sciences and the clinics. It is now clear that medical progress depends primarily upon the former; and just as clear that the immediate direction of that progress is customarily determined by the latter. In the long run medical clinics give satisfactory returns only when supported by the resources of biology and chemistry. It is certain that biology and chemistry develop new worlds of meaning for the prospective student of medicine as soon as he recognizes their profound significance in the interpretation of clinical experience. It is thus a distinct advantage to the student to be able to obtain some clinical experience, while he is studying the fundamental sciences of the premedical course.

To be introduced prematurely to the superficial drama of the clinic *as a substitute* for physics and chemistry and biology and psychology would obviously be unfortunate. But it is reasonable and proper to assume that a student who has made up his mind to study medicine will naturally be especially attentive to concrete cases of medical practice and their theoretical significance. Every such student has some sort of conception of the profession which he desires to enter. It is the business of his teachers to see that his conception accords as closely as possible with the reality. It is accordingly among their functions to introduce him to a limited number of concrete medical problems, that they and he may analyze them together when it is yet time, in the light of the fundamental sciences which he is studying. This is one way of protecting him against the drudgery which the premedical sciences sometimes become when their connection with his ultimate ambition to practice medicine is not clearly apparent. It has a far greater value, however, in demonstrating early to him the prime importance of these sciences to continuous progress in his professional career.

More than any other portion of his period of preparation, his premedical and scientific years fit him for the medicine of the future, as his clinical years fit him primarily for present practice. They do this by furnishing him with fundamental principles that remain relatively stable in the midst of change, adaptable to shifting circumstance, cornerstones, as it were, of progress. This capacity for indefinite expansion he must have, capacity also, to predict the direction of soundest advance. The transformations that have occurred in the last ten years in the field of medicine have been great. Those of the next ten years will surely be greater. In what directions? Those best equipped for scientific discovery will return the readiest answer.

Clinics offer a pedagogic opportunity to the teacher of the fundamental medical sciences. Some teachers, however, fail to grasp it, fearful of the power of the clinic with its concreteness and drama to divert their affections permanently from the jealous mistress, science. There is, indeed, a certain measure of danger here, but this disappears for the most part when it is remembered that the clinic is for the beginning student not a professional tool but a pedagogic device, to be used with understanding and discretion. As such it may help to restore some of the virtues of the apprentice system that as a whole has vanished as the medical curriculum has developed.

With the foregoing consideration before us, it is evident that there is still much room for progress in the organization of the medical curriculum. The University of Oregon has recognized this fact and has attempted to meet the obligation it implies by the establishment of a seven year curriculum, leading to the degree of doctor of medicine. The major portions of this curriculum are taken over bodily from the premedical and medical courses as they formerly existed. But these have become a unified whole by a process of fusion that is something more than a mere end to end linkage of previously separated parts. Whatever merit this new project may have lies, we believe, in the fact that it has been conceived as a closely organized pedagogic unit, a medical curriculum from the start, under a single administration. Students entering college from the high school with intent to study medicine are enrolled at once in the Department of Medicine.

Along with all other students of elementary biology, they attend lectures on some of the fundamental problems of medicine, sufficient to indicate the vital connection between medical progress and the fundamental sciences. During the very first year they attend, under supervision, five or six clinics. They are thus presented, under carefully controlled conditions, with typical practical problems in their chosen field. A class room discussion follows each clinic, to bring out the significance of the fundamental sciences without emphasizing the technic of professional life.

At appropriate times from the beginning of their course they attend lectures on the history of medicine, that this may as early as possible exert its stimulating effect in their background of general culture. They augment this culture with studies that may include literature and the arts, language, history, economics, sociology, philosophy, covering a wide range of human interests and activities. These are in addition to solid courses in biology, chemistry, physics, psychology and an introduction to bacteriology.

The physical separation of the first three years of the curriculum (at Eugene,) from the last four (at Portland) offers a certain obstacle to the unity of which we have spoken. But the obstacle is after all more apparent than real. Geographical differences diminish in the light of unity in spirit and purpose strengthened by certain practical devices.

First, the head of the Department of Medicine in Eugene is also a member of the medical faculty in Portland. He has a definite *liaison* function, residing for a part of each week in each place. Second, a new research department of experimental biology has been created in the School of Medicine in Portland, emphasizing the overlapping common interests of *academic* and what the law has accustomed us to regard as definitive *medical* science. Third, students of medicine at Eugene are encouraged to begin, even tho in a small way, an investigation which they may be interested to continue in Portland under one or another department. Provision is made for elective research thruout the fifth, sixth, seventh and eighth years. Finally, the academic degrees of master of arts and doctor of philosophy may be obtained in the School of Medicine on the same terms as in Eugene. This is a very brief statement of facts and problems that will bear extended discussion.

Whatever their devices, schools of medicine must develop broad gauge, farsighted, skilful practitioners, able investigators, public spirited citizens. What has been said may serve as a brief description of the mechanism by means of which the one school in the Northwest hopes to facilitate such achievements.

Chaulmoogra Oil in Treatment of Tuberculous Laryngitis. This report by R. M. Lukens, Philadelphia (Journal A. M. A., Jan. 28, 1922), gives the results of sixty cases of tuberculous laryngitis treated over a period of eight months with chaulmoogra oil. The treatment was conducted more for the purpose of learning the effects on the pathologic lesions of the larynx and the symptoms than on the tubercle bacillus itself. Chaulmoogra oil gave promising results from the beginning in cases in which there were hysphagia and pain in the throat. In the majority of cases it exerted an analgesic action on the larynx, which became more complete after repeated treatments. While improvement in the lesions is slower than was hoped for, yet cases treated with chaulmoogra oil have responded as rapidly as those treated with other drugs, and the treatment is much more easily borne. Preliminary cocainization has not been necessary, and there has been no pain or discomfort in the throat afterward, but rather a pleasing sensation of warmth in the throat and chest.

SOME CONSIDERATIONS OF CLEFT PALATE SURGICAL TECHNIC.*

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Certain underlying features, anatomic as well as surgical, play a characteristic role in repair work about the oral cavity and the lips, and govern surgical procedures in this region. In some instances these features call for greater technical care and precaution. At the same time they permit of a greater degree of aseptic carelessness than do many parts of the body.

First, the tissues possess an unusual vascularity. It is assumed that the degree of resistance of infection is in direct ratio with the degree of vascularity of a part, and at the same time vascularity usually stands for a more prompt and thoro union and the production of a smaller amount of scar tissue.

Second, if union is successful it occurs quickly and soon becomes firm. Stitches can be removed earlier, and apparently become irritating sooner to these than to other tissues.

Third, the tissues appear to have a certain degree of immunity for most low grade microorganisms. Whether this is due to influence of the vascularity of the parts, or to a local immunity established by reason of the continued presence of this type of low grade microorganisms of the oral cavity or to both factors, is not known, but this resistance is a well established fact.

Fourth, tension is inimical to successful union during the first six or seven days, even tho firm union occurs here more rapidly than elsewhere. This is a general surgical principle, but it is exceedingly conspicuous in its manifestations in this region.

Without giving any consideration in this paper to the mooted etiology of cleft palate, attention shall be directed simply, as well as briefly, to the tissues as presented to the surgeon who desires to overcome this defect and remedy the evil results existing thereby. The average cleft palate represents not so much a deficiency of tissue as a displacement of anatomic structures. Whether this displacement is a result of failure of the embryonic processes to unite, or whether a primary displacement prevents the proper union matters not. The average defective palate presents the analogy, wherein a sufficient amount of tissues for a flat

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* Read before Central Willamette Medical Association, Eugene, Ore., Sept., 1920.

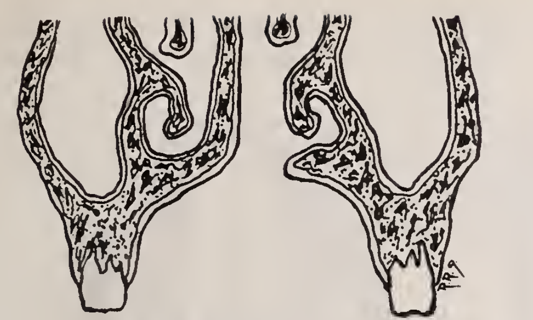

Fig. 1. Obliquity of cleft gives an adquate flap.

roof having been produced by nature, by some process the direction is changed so as to assume the form of a gable roof. (Fig. 1.) By reason of the direction being changed to an upward obliquity, there is left at the top a gap, the width of which is in direct ratio to the degree of obliquity. In some instances there apparently exists a certain deficiency of tissues, especially in very young babies, which deficiency, as a general rule, will lessen as the child reaches the age of two years or more. With this fact in mind, proper reconstruction endeavors to transfer sufficient tissue from the gables in order to construct a so-called "flat roof" for the oral cavity. (Fig. 2.) The early operative procedures in this region were not carried out on this basic principle, and therefore the early successes were meagre compared with the results of present day palatal surgery.

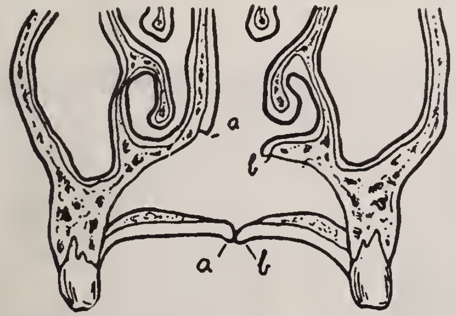

Fig. 2. Mucoperiosteal flaps in the horizontal position to span the gap.

Upon inspection of the ordinary palate which is cleft, it will be noticed that on either side the palate processes of the superior maxillary bones and the horizontal plates of the palate bones are situated in a semivertical position instead of in the normal horizontal position. Measurement of the width on either side of this ledge will usually disclose the fact that the combined measurement is adequate to bridge the roof of the mouth in a horizontal direction. This measurement at once discloses the degree of facility or difficulty to be encountered in an attempted repair.

In planning to construct the new horizontal roof of the oral cavity, it is necessary to give adequate consideration to two salient features. First, the tissue flaps transferred must have adequate nutrition to maintain their integrity; second, the tissue flaps must be of adequate substance to form a roof equal to the stress and strain required for the important boundary of the oral cavity.

Surgical experience has demonstrated that, if the tissue flaps to be dropped down are composed of the mucosa, the submucosa and the periosteum of the undersurface of the palate processes, undisturbed in their relationship to each other, a new structure is formed thereby of a thickness and strength adequate for all the requirements of nature. Undoubtedly the transferred periosteum reproduces enough osseous tissue to give perfect firmness and strength. The circulation of the palate, upon which we must depend for its integrity, comes from two sources; namely, the posterior palatine arteries emerging from the posterior palatine foramina, in the suture line between the horizontal plate of the palate bone and the posterior border of the palate process of the superior maxillary; and from the nasopalatine artery emerging from one of the openings in the anterior palatine foramen, situated in the suture line between the palate processes on either side at a point where they join with the alveolar arch. In complete cleft palates this anterior blood supply may be disturbed or absent. Another source of nourishment, not to be depended upon, is from the anastomosis with tiny vessels derived from the continuity of the aveolar soft tissues anteriorly and laterally, and from the pillars of the fauces posteriorly. The posterior palatine artery encircles in a groove the periphery of the hard palate at its junction with the base of the alveolar process. The avoidance of injury to this vessel in elevating the periosteum requires a combination of tactile skill and some good fortune.

In approximating the edges of the two flaps it is essential that they come together without the least degree of tension. If this does not occur, some tissue must be elevated laterally, going over the alcvolar process in order that this free apposition may be secured. If the edges are drawn together by tension sutures, these will not endure an adequate length of time for union, since they

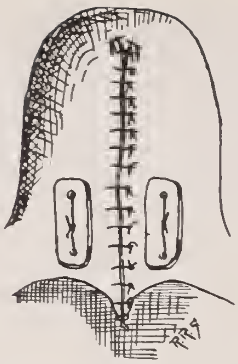

Fig. 4. Lead plate splints on muscles of soft palate.

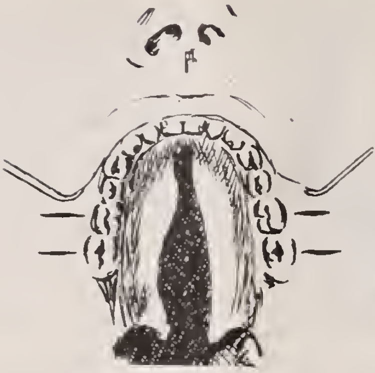

Fig. 5. Incisions externally to secure additional tissue.

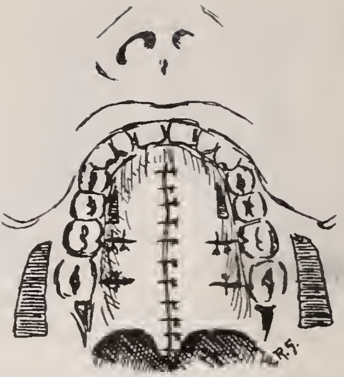

Fig. 6. Completion of Fig. 5.

readily cut their way thru the tissues and failure of union invariably ensues.

In suturing the posterior portion of a palatial cleft, another source of tension must be taken into consideration. This is the continued contraction pull of the palatoglossus and palatopharyngeus muscles, composing respectively the anterior and posterior pillars of the fauces. Even tho the tissues of the soft palate and the posterior extremity of the hard palate lie in perfect and easy apposition under anesthesia relaxation, each act of crying or swallowing on the part of the child produces a pull thru these muscles upon the line of suture. This constant intermittent traction on the coaptation sutures will inevitably disturb the coaptation of the suture line.

This pernicious factor is overcome by placing a device posteriorly which takes up the strain of each muscular contraction and protects the coaptation sutures. The device consists of placing two or three annealed silver wires thru the muscular velum some distance from the suture line, fastening them on either side to a properly constructed lead plate thru perforations therein. (Fig. 4.) This can better be described by the illustrations accompanying this article than by pen description. The silver wire sutures are drawn up to a point of tension, whereby a slight bulging of the suture line is produced. The lead plates serve a double purpose. First, they act as a splint on the muscles; and, second, they prevent the wire sutures from cutting thru the soft tissues during tension of muscular contraction, by reason of the broad surface presented to the soft tissues.

In a brief resume of this surgical technic compatible with the allotted time for our paper, it is not possible to clarify minutely the many essential details of a cleft palate operation. The successful procedure requires instruments of a type suitable for the tissues to be handled and the cavity in which the operation is performed. A facile elevation of the mucoperiostial flat is only accomplished with elevators of especial shape. The so-called fishhook needles permit the return stitch to be made with greater ease and more accuracy than the ordinary curved needle. The horsehair used must be of the best quality and strength and should be securely tied, but without too great a degree of tension. The lead plates are made of a size and shape to fit the individual case, and long enough to "splint" the palatal muscles. The annealed silver wire is best used double and not of too large a gage.

It would appear that ether is the safer as well as the more logical anesthetic for this type of operation, even in the very young. The nicety of chloroform anesthetic cannot be defined. In the hands of an experienced anesthetist it may be safe.

Fig. 3

It is desired to emphasize at this time the "stage setting" for this procedure as well as for other surgical precedures in and about the oral cavity. Certain details have been carried out by us for many years in our clinic work which have especially facilitated the procedure of this type of surgery, as well as the safety of the patient. Figure 3 is possibly more illuminating than words.

First. With the child placed in the extreme Trendelenburg position, the advantages of this position are obvious. All of the blood gravitates into the nasal cavity and none goes into the pharynx; therefore, the child will neither swallow nor aspirate blood into the larynx. The blood can then be readily sponged away, or is constantly removed without the bother or time loss of sponging by the "sucker" appliance, as described below. The operator sits upon a stool and looks directly down upon his field of operation. This position gives the operator a comfortable position to occupy during this tedious procedure, and at the same time to some degree at least puts his operative field before him on a "flat" surface. With his headlight the field of operation is always provided with ample illumination. This illumination is constant and free from any disquieting shadows. The operator and headlight occupy a minimum amount of space, thereby enabling him to make available a greater amount of assistance by others.

Second. A rubber catheter which is passed into one nostril and attached to a "sucker" removes the blood from the nasal cavity as rapidly as it is spilled, thereby keeping the operative field clear from this impediment to rapid work, and reducing the necessity of sponging to a minimum. Some of these operations have been performed from beginning to end without the use of more than half a dozen small sponges.

Third. An assistant with one hand adequately keeps the tongue out of the way by a suture thru the tip of the tongue.

Fourth. The anesthetic is given by means of the conventional blower and the anesthetist is entirely out of the way.

The time for the repair of congenital defects of the oral cavity has been a matter of considerable difference of opinion. As time goes on it is more generally conceded that the earlier these procedures are carried out, the better it is for the child. The hare lip operation should be done very early in infancy for many reasons. The cleft palate operation should without question be performed before the child acquires the habit of imperfect speech. The procedure on a healthy baby produces but little shock and the mortality is extremely low. If the cleft is especially broad, and on this account it is necessary to secure flaps from over the alveolar process and even from the side of the cheek, it is very advantageous from a surgical standpoint to carry out this procedure before the lateral teeth erupt. We have done it after the teeth have erupted and cut new openings in the transposed flaps for certain teeth, with success but not without great difficulty. Accompanying figures 5 and 6 illustrate this method of securing additional tissue for the flaps, when they are inadequate in size to bridge over the cleft. The consideration of these principles are not in the province of this paper, and therefore are only briefly mentioned.

The judgment of the surgeon and the attending pediatrist must make the decision of the *exact* time for operation in individual cases. The wisdom of refraining from operating on a child with malnutrition or poor physical condition is obvious. Each case must be considered individually and weighed on its own merits.

REMARKS ON UROLOGY AND SYPHILIS

J. Guy Strohm, M. D.
PORTLAND, ORE.

It was my good fortune to attend the International Association of Urology in Paris last summer, and thus to obtain the viewpoint of the profession from many countries. Young, of Baltimore, and Keyes, of New York, received the best reception of all the speakers present, which helps to prove my idea that the best work can be seen right here in the United States. The surgical technic here is much better than in Paris or Vienna.

As regards the kidney, the one outstanding feature most worthy of mention is unrecognized tuberculosis, occurring most frequently in patients from 20 to 40 years of age, with symptoms usually pointing to the bladder. In the average case of urinary disturbance, in which affections of the urethra and prostate can be ruled out, this condition is usually primary in the kidney rather than in the bladder. A pyuria lasting over several weeks, with negative urethra, prostate and vesicles, means kidney nine times out of ten, and it is then our duty to rule out kidney tuberculosis before we make the average diagnosis of cystitis. The treatment of tuberculous kidney is nephrectomy.

As a rule the average case of pyelitis is due to the colon bacillus, but I was surprised to learn in Vienna of the number of gonorrheal infections of the kidney pelvis. . However, after a short time it is difficult to obtain gonococci from the pelvis, as they are evidently replaced by staphylococci and steptococci. A great surprise awaited me when I saw the treatment of these cases, which was the emperical use of only 0.15 neosalvarsan every three or four days. A colon bacillus infection of the kidney pelvis or elsewhere in the urinary tract is treated with urotropin, either intravenously or large amounts by mouth with very little water, thus keeping the urine as concentrated as possible, plus colonic irrigation.

As to kidney function tests, one of the most simple, and at the same time most practical, is the so-called dilution and concentration test. At 7:30 a. m. the patient voids, and in the next half hour is given from 1000 to 1500 cc. of plain water; at 8 urinates, no record kept; at 8:30 again voids, the amount being collected along with the specific gravity. This is repeated every half hour until noon. The collections cease at noon and the patient is allowed ordinary diet but no fluids. The urine is again collected every hour from five till seven. A normal kidney will excrete from 80 to 100 per cent of the water taken by noon, and in the second half hour, of record, in the morning it will excrete the most fluid with the lowest specific gravity.

The second hour in the evening will show the smallest amount of fluid but with the highest specific gravity. A diseased kidney will excrete far below the amount of fluid taken in by noon, and the second half hour morning collection will not show the uniform high amount of urine of low specific gravity, nor will the second hour evening collection show the uniform small amount of urine and high specific gravity.

The so-called cystitis, which is usually secondary to the kidney lesion, is being less treated with irrigations and thus painful distensions of the bladder, but instead is put to bed, given colonic irrigations, a little water, a mild bladder sedation such as postassii citras 30., tr. hyoscyami 30., aquae qs. 180.

After the acute stage or in a few days large doses of urotropin, by which time the condition is much improved and the patient is ready for cystoscopic examination and thoro urologic study. Understand, I do not wish to underrate the value of early cystoscopic examinations, but the routine use of the cystoscope in acute bladder conditions and the indiscriminate use of ureteral catheters have caused many acute infections of the kidney which could have been avoided.

In some of the best clinics in Europe they have discontinued doing routine catherizations of both kidneys, and attempt to locate the diseased kidney by the appearance of the ureteral orifice, and then if possible catheterize only the affected side. This is probably an extrěme viewpoint to take, but it does show the dangers of indiscriminate ureteral catheterizations. When it is necessary to treat bladders locally, the method of irrigation is losing favor to that of instillation with a small soft catheter, using about 10 cc. of the following, especially in T. B. bladders: Guaiacol 2., iodoform 3., sterile olive oil 100. every two or three days. Ten cc. of a 10 or 20 per cent oleo gomenol, a French preparation, is exceedingly well tolerated by all sensative bladders. Another excellent solution for obstinate cases of cystitis(dangerous term, may be T. B. kidney above), is 5 cc. of 5 per cent solution of collargol, plus 5 cc. of sterile olive oil. Shake the two in test tube and thus make emulsion each time of instillation. Instillations of 10 per cent argyrol are also excellent.

It may be safer to use the term cystitis in women than in men, because of the short urethra and often distorted bladder, on account of pregnancy. Here instillations are often beneficial. Irritable bladders in women with inefficiency or urgency often show normal clear urines with negative cyoscopic findings, and show improvement with instillation of .5 per cent silver nitrate, gradually increased to 2 per cent.

Marion, of Paris, does an operation for vesicovaginal fistula which appeals to the average man. He makes a transverse suprapubic incision, uses a bladder retracter, dissects out fistula, catgut sutures in bladder and intervening space, linen suture in vagina, with Pezzar catheter in urethra for few days.

The two stage prostate operation in America is far in advance of the European work. In Vienna just now they are teaching that the prostate is not removed in the so-called prostatectomy but rather that an adenoma of the periurethral glands is what is really removed.

Many an old man in the country who is suffering from back pressure in his kidneys and absorption from his bladder, because his enlarged prostate dams back his urine, can be relieved by the use of local anesthetic, small incision suprapubicly into the bladder and the insertion of a self-retaining Pezzar catheter. I have seen old men so relieved by this measure that they refuse more interference.

SYPHILIS

Regarding syphilis, it is unnecessary here to state the wide prevalence and number of recognized cases. The diagnosis in early cases is the use of the dark field, which is too often negative, especially in my locality; then the blood Wassermann which when negative is often deceptive; and, last, but not least, the use of the good old fashioned clinical history and symptoms. If one keeps in mind the fact that all sores in the genital region are syphilitic until proved otherwise, the diagnosis will not go far astray. The history is often unreliable as to the date of the appearance of the lesion. It would propably be better for humanity if the cause of chancroid had never been discovered. Often the infection is a combination of the spirochete and the Ducrey bacillus. In older cases a complete physical examination, not forgetting the reflexes, will present sufficient cause for examination of the spinal fluid.

Day by day the lists are growing greater of negative blood Wassermanns, but very strongly positive spinal fluid Wassermanns, in cases in which the diagnosis of syphilis is undreamed of. The method of treatment of syphilis thruout the world seems to be as diversified as the symptoms of the disease itself.

In Paris, one of the leaders use 0.15 of a gram novarsenobenzol "Billon" every other day over very long periods of time; while another equally prominent man, in old cases of visceral syphilis, starts out very cautiously with 0.05, increasing .05 of a gram every five to seven days, and governs his injections according to the after symptoms, such as headaches, dizziness, pains or tinglings in the extremities, nausea, diarrhea and temperature.

LeRedde says he is not afraid of the drug but of the disease. Finger, of Vienna, uses neosalvarsan in small doses from 0.30 to 0.45 of a gram every three of four days, with injections of mirion, a collodial iodine, between the neosalvarsans. Finger is very partial to colloids, and states that, when colloid of mercury is found, it will supercede salvarsan.

It is pretty well considered the world over that the happiest results in the treatment of syphilis are obtained in the very earliest cases. In very early cases, in which a diagnosis can be firmly established, it is my rule first to try out a small dose of neosalvarsan on a patient, watching to see if there is any idiosyncrasy to arsenic and, if not, within two days use 0.90 neo every three days, watching carefully the reaction of the patient to the drug, weight, urine, skin and special inquiry for history of tinglings in the extremities. In patients who stand this energetic treatment I have given from 10 to 15 injections of neosalvarsan and I have been able in this manner to make the blood Wassermanns negative for periods as long as three years to date.

One must realize the danger of arsenical poisoning from this intensive treatment, but in early cases it is undoubtedly the best method we have at this time for treating syphilis. The patient is then given a rest for two or three weeks, then 10 or 15 injections of mercury at five day intervals are given in the hip. Another short rest is followed by a few injections of neosalvarsan at weekly intervals.

The above method is followed for the next two years with longer rests between courses. A spinal puncture is performed before the patient is discharged, and he is advised to return for blood Wassermann every six months, later yearly. The treatment of syphilis, after the spirochetes have become firmly entrenched in the vital organs of the body, is slow and tedious and often times unsatisfactory. The intraspinal treatment of syphilis has been so discouraging to me that I have given it up entirely.

NORTHWEST MEDICINE
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EDITORIAL

DIPHTHERIA TO BE ABOLISHED

Reports from the health authorities in various eastern states concerning the immunization by the Schick treatment lead one to believe that within a comparatively short time diphtheria may be relegated to the position of typhoid, yellow and malarial fevers, as diseases practically eliminated. By use of the Schick test those people are recognized who are susceptible to diphtheria. Immunization of these susceptibles by the toxin-antitoxin treatment will protect the people of any community from contracting this disease, if it were possible to subject all susceptibles to this procedure.

The realization of the feasibility of this course of treatment is dawning upon the health authorities in various parts of the country. Dr. Joseph Kane, health officer of Tacoma, has agitated this subject thru the Pierce County Medical Society and has presented facts to that city in an impressive manner. Attention has been called to fifteen deaths out of 152 cases during 1920, emphasizing the fact that from the sixth month to the sixth year there are few who will not contract the disease, this period of life furnishing 70 per cent of deaths from diphtheria. It is noted that prevention is always better than cure. A description is given in terms clear to the layman of the method of determining the suspectibles by the administration of the Schick test. Then it is explained that every child showing positive to this test should be immunized by the toxin-antitoxin treatment. When three doses of this treatment are given the individual is protected against diphtheria for several years, perhaps for life. Efforts are made to impress upon all people of the community that all children between the ages of six months and sixteen years should be examined to determine their susceptibility and security by immunizing them.

The school authorities of Everett last month directed the examination of all the children in a certain school which was last year closed on account of an epidemic of diphtheria, several cases already having occurred from diphtheria in that district. The State Board of Health is prepared to render assistance whenever the health and school authorities determine upon this course of action. Here is a field for educational propaganda which should be carried on thru the daily press. When the general public is cognizant of the fact that this dreaded disease may be safely checked and ultimately eliminated, there will be hope for cooperation to obtain this beneficial result.

PACIFIC NORTHWEST MEDICAL ASSOCIATION

At the meeting of this organization, to be held at Spokane, July 6-8, the following speakers have been secured, in addition to those announced in our last issue. Dr. Joseph C. Bloodgood, of Johns Hopkins, has accepted an invitation to read papers on each of the three days. His papers will be illustrated by lantern slides. His subjects will be malignant tumors of the breast, mouth and bone. Dr. R. T. Woodyatt, of Rush Medical College and Sprague Memorial Institute for Clinical Research of Chicago, will also be on the program. A survery of the hotel accommodations in Spokane is being made and will be announced later. Reservations should be made early. Headquarters will be in the Davenport Hotel. An attempt is being made to secure reduced rates on the railroads. In the announcements regarding the meeting that were sent out registration cards were enclosed. Physicians are urged to register early, as this will aid the committees in their work. The association is being financed by the ten dollar registration fee. As many of the speakers are full time teachers of medicine, and consequently receive but a comparatively small salary, their expenses have to be paid.

THE ST. LOUIS MEETING OF THE AMERICAN MEDICAL ASSOCIATION

The meeting of the American Medical Association, to be held at St. Louis May 22-26, promises well toward being the largest in attendance of any of the Association's sessions. Since the publication of the hotels in the Journal of the Association in December, inquiries and reservations are being made daily. The hotels and the

ST. LOUIS LEADING HOTELS (ALL EUROPEAN PLAN), THEIR LOCATION AND RATES

Hotel, with Number of Rooms	Street Address	Without Bath		With Bath	
		Single	Double	Single	Double
American, 275	7th and Market Sts.	....	....	$2.50-3.00	$4.00-6.00
Diseoses of Children					
American Annex, 225	6th and Market Sts.	....	....	2.00-3.00	3.00-6.00
Pathology ond Physiology					
Pharmocology and Theropeutics					
Beers, 114	Grand and Olive Sts.	$1.50	$2.50	2.00-2.50	3.00-3.50
Brevort, 50	4th and Pine Sts.	....	....	2.00	3.00
Cabanne, 43	5545 Cabanne St.	....	....	12.00-37.50*	
Claridge, 350	18th and Locust Sts.	....	....	2.50-4.00	4.00-10.00
Obstetrics, Gynecology ond Abdominal Surgery					
Hamilton, 160	Hamilton and Maple Sts.	....	....	2.00-2.50	3.50-4.00
Jefferson, 400	12th and Locust Sts.	2.50-3.00	4.00	3.00-8.00	6.00-10.00
Surgery, Generol ond Abdominol					
Orthopedic Surgery					
Laclede Hotel, 265	6th and Chestnut Sts.	1.50-2.00	2.50-3.00	2.50-3.00	3.50-4.00
Majestic, 200	11th and Pine Sts.	....	....	2.50-3.00	3.50-4.00
Dermotology nnd Syphilology					
Nervous ond Mentol Diseoses					
Marion Roe, 200	Broadway and Pine Sts.	....	....	1.50-2 00	3.00-4.00
Marquette, 400	18th and Washington Sts.	2.00-2.50	3.00-3.50	3.00-3.50	4.00-6.00
Loryngology, Otology and Rhinology					
Maryland, 240	9th and Pine Sts.	2.00	3.00	2.00-3.50	3.00-5.00
Gostro-Enterology ond Proctology					
Urology					
Planters, 400	4th and Pine Sts.	2.00-2.50	3.00-3.50	2.50-5.00	4.00-8.00
Ophthalmology					
Plaza, 200	3300 Olive St.	....	....	2.00-2.50	3.50-5.00
Roselle, 100	4137 Lindell Blvd.	....	....	1.50-2.50	2.50-3.50
St. Francis, 120	6th and Chestnut Sts.	1.50-2.00	2.50-3.00	3.00-4.00	4.00-5.00
Statler, 650	9th and Washington Sts.	....	....	3.00-7.00	5.50-9.50
Proctice of Medicine					
Stratford, 100	8th and Pine Sts.	1.50	2.50	2.50	3.50
Terminal, 100	Union Station	1.50-2.00	3.00	3.00-3.50	5.00
Warwick, 200	15th and Locust Sts.	....	....	2.00-4.00	4.00-6.00
Stomotology					
Preventotive Medicine ond Public Heolth					
Westgate, 125	Kingshighway & Delmar Sts.	2.00	2.50	3.00	3.50

* Weekly rates only.

Conventions Bureau are aiding the Committee in a most satisfactory and helpful way to see that the Fellows are comfortably housed and accommodated. The A. M. A. meetings tax all cities entertaining them to the limit of hotel capacity. Whenever possible a good Fellow should double up, so that no one is left without comfortable lodging.

Reservations should be made by communicating direct with the hotels. If satisfactory arrangements cannot be made in this way, write to Dr. Louis H. Behrens, Chairman Committee on Hotels, 3525 Pine Street, St. Louis, Mo.

LOWEST INFANT MORTALITY RATE

The Department of Commerce, thru the Bureau of the Census, has recently announced the provisional infant mortality rates for 1921. In fifty cities it is encouraging to note a rate of 74 per thousand births in 1921, as against 90 in 1920, for forty-four cities. The lowest rate on the list is 47 per thousand, which appears for three cities, Portland, Ore., Seattle and St. Paul, as a contrast to the highest rate of 111 for Fall River. No city showed a higher rate in 1920, altho a few maintain the same rates. These figures indicate, as for similar ones in the past, that the healthiest section in the country can still be claimed for the cities of the Pacific Northwest.

NEW ADVERTISEMENTS

Attention is called to the following new advertisements appearing for the first time in this issue and that of last month. Bauer and Black (pages 7 and 26) present advertisements regarding some of their products, well known to the medical profession. The Mellins' Food Company (page 12) gives references to their well known foods for infants and invalids. The McKerrall School (page 25) is for the purpose of teaching lip reading for hard-of-hearing adults.

MEDICAL NOTES

OREGON

Portland County Medical Society held its annual meeting Dec. 21. The following officers were elected for the ensuing year: Pres., J. G. Strohm; Vice-Pres., George Parrish; Sec'y., C. H. Bean; Treas., Kitty Plummer Gray. Councilors for two years: Charles Bodine, F. R. Menne, Henry Howard, Raymond Watkins, E. B. McDaniel, Harold Palmer, W. T. Williamson, Roy Stearns, Fred Ziegler. The following delegates were elected to the meeting of the State Association: R. B. Dillehunt, Eugene Rockey, J. M. Short, F. M. Brooks, C. U. Moore, Charles Booth, Raymond Watkins, E. B. McDaniel, W. S. Knox, G. F. Koehler, A. C. Smith, Charles Chamberlain, W. Johnson and Fred Kiehl.

Polk-Yamhill-Marion Society held its annual meeting at Salem, January 24. The following officers were elected for the ensuing year: Pres., P. W. Byrd, Salem; First Vice-Pres., E. E. Fisher, Salem; Second Vice-Pres., A. B. Starbuck, Dallas; Third Vice-Pres., J. O. Matthis, Salem; Sec.-Treas., C. W. Southworth, Salem.

Home for Visit. Dr. Boyd Richardson, who formerly practiced at Salem and Marshfield, has recently visited several Oregon cities. He left Marshfield ten years ago for practice in India. He enlisted in the British army during the war, seeing service in Egypt, Turkey and France. While working in a dug-out hospital in Ypres a bomb exploded, killing all of the occupants except himself. He relates many interesting incidents of life in India.

Lane County Medical Society held a meeting in Eugene, Jan. 4, in conjunction with the dentists who were guests of the doctors. An interesting program was presented. Dr. Diemer, of Portland, gave an address on x-ray work and Secretary McInturff, of Portland, spoke on the work of The League for Conservation of Public Health.

Board of Health Officers Elected. Dr. C. J. Smith, of Portland, was last month elected President of the State Board of Health, at its annual meeting in Salem. Dr. J. H. Rosenburg, of Prineville, was elected vice-president and Dr. F. M. Stricker, of Portland, secretary.

Dr. D. H. Rutherford, who has practiced in Sherwood for twenty-six years, has moved to Southern California where he will make his future home.

Dr. A. C. Eaton, who has recently resided at Elgin, has located at Omaha, Neb., for future practice.

Medical Wedding. Dr. C. W. Thomas, of Milton, was married to Miss Lucile Wolf, of Illinois, Jan. 4, the ceremony being performed at Milton.

WASHINGTON

King County Medical Society held its annual meeting Jan. 9. The following officers were elected for the ensuing year: Pres., Copeland Plummer; Vice-Pres., C. E. Hagyard; Sec'y.-Treas., D. V. Trueblood. H. C. Ostrom and B. T. King were elected to the board of trustees. Delegates to the state association meeting in Tacoma: G. W. Swift, P. V. von Phul, C. W. Sharples, W. C. Lippincott, E. W. Young, John Hunt and F. M. Carroll.

Spokane County Medical Society held its annual meeting Jan 12. The following officers were elected for the ensuing year: Pres., Carl Wiseman; Vice-Pres., Charles Doland; Sec'y., Arthur Betts; Treas., Mitchell Langworthy; Board of Censors, C. B. Ward, J. D. Windell, H. E. Rhodehamel. Executive committee: Robert Hamblen, T. M. Ahlquist, E. J. Barnett. Delegates to the state medical association meeting: Carl Wiseman, George Downs, Charles Doland, Charles Butts. Alternates: Frank Fursey, John Bird, Frederick Epplen, P. D. McCornack.

Pierce County Medical Society held its annual meeting in Tacoma, January 24. Interesting addresses were delivered by several members of the society. The following officers were elected for the ensuing year: Pres., C. D. Hunter, Tacoma; Vice-Pres., Sydney McLean, Tacoma; Sec.-Treas., W. B. Penny; Trustees, W. D. Read, P. B. Swearingen, J. B. McNerthney, J. R. Brown and H. G. Willard.

Skagit County Medical Society held its annual meeting at Mt. Vernon, Jan. 9. Dr. F. S. Bourns, of Seattle, and Mr. J. M. Gilbert, Secretary of the Washington Health League, addressed the meeting on this organization. The following officers were elected for the ensuing year: Pres. J. W. Straight; Vice-Pres., C. W. Crompton, Sedro-Woolley; Sec'y.-Treas., J. E. Lloyd, Mt. Vernon.

Gray's Harbor Medical Society held its annual meeting at Aberdeen, January 18. The following officers were elected for the ensuing year: Pres., A. E. Anderson, Hoquiam; Vice-Pres., J. B. Kinney, Aberdeen; Sec.-Treas., E. R. Ahlman, Hoquiam; Censor, G. E. Chamberlain. A. J. McIntyre, Hoquiam, was elected representative to the next meeting of the State Medical Association.

Hotel Converted Into Hospital. The Fairhaven Hotel of Bellingham, built thirty years ago at a cost of $300,000, has been purchased by a corporation and is to be converted into the Yoghurt Sanatorium, Inc. It will feature the products of a food company bearing this same name. The institution will be in charge of Dr. A. Jeff Nelson, of Seattle. The building contains five stories with one hundred rooms. It is built of brick and contains the original elaborate hotel furnishings.

Doctors Manage Hospital. A hospital has been established at Anacortes, whose legal title is Anacortes Physicians, Inc., which is to be managed by five physicians of that city. The institution was formerly known as the Anacortes Hospital. The building is to be improved and equipped as a first class hospital.

New Hospital Opened. The new Normal School Hospital, at Cheney, was opened January 13. It has been remodeled and equipped at a cost of several thousands of dollars. It is partly maintained by a hospital fee collected from each student.

Bequest to Hospital. A bequest of about $40,000 was last month left to the Tacoma General Hospital by the late Mrs. Jane C. Bradley. It is said the institution is very much in need of an additional wing, as it has long been overcrowded with patients.

The Orthopedic Hospital, Seattle, last month announced its appointments for the staff of 1922. It is a rotating staff, including a large number of leading physicians and surgeons. The staff treats charity patients, while all other physicians who desire to do so may send their patients to the hospital under their own medical treatment.

Hospital Burned. The Kulshan Hospital, of Sumas, was destroyed by fire in December. At the time it contained no patients, the nurses alone sleeping in the building. It was a frame structure with eighteen beds and was totally destroyed. It is stated that it will be rebuilt in the spring, constructed of brick.

Smallpox Epidemic Caused by Osteopath. During the past few months a puzzling epidemic of smallpox existed at Yakima. After considerable investigation it was found that the first patient was treated by an osteopath, who diagnosed the case la grippe. The first case appeared outside the city and later was communicated to the children in one of the schools. Patients sometimes appeared at the rate of half a dozen a day. After extensive vaccination and revaccinations the epidemic was suppressed.

Credit Bureau Formed. A credit bureau has been formed in Spokane, comprising fifty physicians and dentists, which will act as a rating bureau and bonded collection agency for the professions of that city. The association was incorporated for $25,000 with charter members of twenty-five physicians and twenty-five dentists. Membership will be open to all physicians and dentists of the city.

State Medical Examination. Examination for licenses was held at Olympia, Jan. 10-12. Duncan Fuller, of Seattle, and F. R. Fischer, of Spokane, obtained licenses by examination, while thirty-six were admitted to practice under reciprocity.

Appointed to Board of Health. Dr. Jacob S. Smith, of Bellingham, was last month appointed a member of the city Board of Health, in place of Dr. E. W. Stimson resigned.

Dr. Horace G. Lazell, who has practiced in Seattle for nineteen years, has moved to La Jolla, Cal., where he will practice in the future.

Dr. G. O. Kech has located for practice at Hoquiam. Formerly he was with the Indian Agency at Taholah. Recently he has resided at Greenville, Pa.

IDAHO

Communicable Diseases for 1921. There were 4451 cases of communicable diseases reported in Idaho last year, of which 1596 were measles, 857 smallpox, 498 scarlet fever and 254 diphtheria. Infantile paralysis was particularly noted in Ada, Latah and Nez Perce counties. Typhoid presented thirty-one cases in Twin Falls county. Only two cases of spotted fever were reported while twelve deaths occurred from this disease.

Dr. L. T. Brock has located for practice at Hailey. Formerly he was engaged in the drug business in this city but since 1889 has resided in California.

G. S. Murphy, of Twin Falls, has moved to Pasadena, Cal., where he will be engaged in practice.

Dr. C. F. Magee, of Ottawa, Ontario, has located at Moscow, where he will practice for the future.

OBITUARIES

Dr. Carleton T. Bacon, of La Grande, Ore., died Dec. 31. He was born in Illinois in 1857 and graduated from Rush Medical College in 1882. At that time he settled in Arlington, Ore., where he practiced until 1891, when he moved to La Grande. He was a member of the State Board of Health from 1917 to 1921, being president in 1920. He served as City Health Officer of Union County for many years.

Dr. H. W. Wooley, of Pocatello, Ida., died Jan. 8 as the result of gun-shot wound thru the heart. He was found dead in his office, presumably a suicide. He was born in the Hawaiian Islands in 1874. He came to Idaho in the late nineties and for a number of years was deputy internal revenue collector. He was assayer at the mint at Boise for several years. In 1909 he graduated from Northwestern Medical School, in Chicago. The same year he located at Pocatello. He was an unusually successful practitioner, active in politics, and possessed a large amount of property.

Dr. James T. Walls, of Portland, Ore., died at Powers, Jan. 9, as the result of cerebral hemmorrhage of two years ago. He was a native of Kentucky. He was 70 years of age and practiced medicine for 45 years, 30 years of which were spent in Portland.

Dr. Isabella S. Hotchkiss died at Tacoma, Wash., January 22, at 82 years of age. She was born in Canada in 1849. She was a graduate from Knox College and in 1878 received her medical degree from a Chicago medical school. She practiced in Chicago for 20 years and resided in Tacoma for the last three years.

Dr. C. F. Dulin, formerly of Yakima, Wash., died from tuberculosis at Tucson, Ariz., January 20. He was born in Monroe County, Ind., in 1869. He studied medicine in Washington, D. C. He served with the National Guard in the Spanish American war. While in the Phillipines he contracted tuberculosis. He practiced for many years in Yakima, but gave up practice five years ago because of ill health.

Dr. Christian Johnson, of Hoquiam, Wash., died Jan. 2, following a surgical operation. He practiced medicine for fourteen years at Wilmer, Minn. Two years ago he moved to Hoquiam for his health.

Dr. J. R. Richardson, of Wenatchee, Wash., died Dec. 27, at Elcajon, Calif., from disease of the heart. He resided at Wenatchee for the past eight or nine years and had gone to California for the benefit of his health.

Dr. Fred C. Taylor, of Spokane, Wash., died Jan. 10, from cerebral hemmorrhage. He was born in 1858 and settled in Spokane eighteen years ago. Three years ago he gave up practice on account of ill health.

BOOK REVIEWS

Edited by Kenelm Winslow, M. D.

The Blood Supply to the Heart in Its Anatomical and Clinical Aspects. By Louis Gross, M. D., C. M. Fellow in Pathology, McGill University. With an introduction by Horst Oetel, Stathcona, Professor of Pathology, McGill University. Montreal. With 29 full page plates. $5.00. 171 pp. Paul B. Hoeber, New York, 1921.

This is a splendidly printed and illustrated monograph and presents, as no other, the most accurate knowledge on the subject and deductions of great clinical and pathologic importance. The coronaries are injected with barium and gelatine, and most beautiful photographic plates are shown, taken from stereoscopic roentgenograms. Colored injections of the coronaries are also made for sectioning. The blood supply of the neuromuscular tissue has also been well worked out. The vasculature of the valves of the heart, seen in fetal circulation, persists in some individuals and these are more prone to endocarditis. The normal adult rarely possesses the vasculature seen in early life. As age advances an individual is less susceptible to endocarditis, owing to the disappearance of vascularity in the valves.

The author leans to infection of the valves more from bacterial adhesion of organisms from the general blood stream rather than from infection thru the nutrient vessels in the valves themselves. This he believes is partly due to compression of the valves. Anastomoses are shown to occur between the branches of the same coronary artery, as well as with branches of both arteries. In fact, no organ is richer in capillary anastomoses. And, as age advances, the branches grow more free and patent, so in old age the heart is more capable of compensating for gradual obliteration of the coronaries thru arteriosclerosis. It is indeed demonstrated that obliteration of large branches, and even of a main coronary artery, may occur without any appreciable effect on the patient. At the same time there is a noticeable anemia of the right heart in age and, in consequence, the dangers of pneumonia and infections are much enhanced. "A man is as old as his right coronary artery." The work is a most admirable presentation of the subject from every point of view and the beautiful plates add greatly to the interest of the book.

Winslow.

1920 Collected Papers of the Mayo Clinic. Rochester, Minn. Octavo of 1392 pp, 446 illustrations. Philadelphia and London: W. B. Saunders Company. Cloth, $12.00 net.

The latest volume of the Mayo Clinic is larger in size than most of its predecessors and contains an enormous amount of valuable material. It is impossible to more than note some of the topics which especially interest the reviewer, while many may find other articles of greater worth. There are a number of papers on ulcer of the stomach and duodenum by the two Mayos, Eusterman, Carman and MacCarty, which cover the field of pathology, diagnosis, treatment and prognosis. The surgical treatment of ulcer now is only ideal, when the ulcer can be removed by cauterization or resection. Gastroenterostomy alone aften gives poor results, especially in respect to recurrence of hemorrhage in duodenal ulcer. The well-known position of the Mayos, in respect to cancer, being a common result of gastric ulcer is discussed by MacCarty.

He affirms that we have no positive proof that cancer does develop upon gastric ulcer and that we therefore cannot tell what percentage of gastric ulcers become malignant. But he states that cancer is unquestionably associated with gastric ulcer, and that one cannot tell them apart by gross appearance. If an ulcer is wider than 2 c.c., it is usually cancerous. The old assertion that 70 per cent of gastric cancers are developed on an ulcer base has been abandoned, but there is no doubt that cancer in some way, and in a large percentage of cases, is secondary to ulcer. Eusterman believes that medical treatment in ulcer is indicated in mild and comparatively recent cases, since removal of focal infections is practiced at the same time, and some chronic ulcers heal spontaneously. Also medical treatment is advisable for patients with other diseases which make operation hazardous.

Lemon is very instructive in emphasizing what we have pointed out before in this column, i. e., that operations on the throat, mouth and nose, under general anesthesia, may result in lung abscess through aspiration of infectious material. Such a calamity does not occur when local anesthesia is used. The Mayo Clinic volumes have become a necessity if one wishes to keep abreast of medical progress.

Winslow.

Epidemiology and Public Health. A Text and Reference Book for Physicians, Medical Students and Health Workers. In Three Volumes. By Victor C. Vaughan M. D., LL. D. Assisted by Henry F. Vaughan M. S., Dr. P. H. Commissioner of Health, Detroit, and George T. Palmer M. S., Dr. P. H., Epidemiologist, City of Detroit. Vol. I, Respiratory Infections. Cloth. 698 pp. $9.00. C. V. Mosby Co., St. Louis. 1922.

Not the least interesting contribution is the preface which gives a summary of Vaughan's long personal experiences with epidemics, beginning as a boy with dysentery, so common in summer in rural districts, where the feces often are deposited on the ground and carried about by the feet of human and domestic animals. He then describes his experience in a malarial region, and so on with typhoid in the early days, down to his large experience with 20,000 cases on the typhoid commission in the Spanish war, and finally concludes with that in the more recent influenza outbreak in the World War.

In this work are included pollinosis, coryzas, pneumonias, measles, German measles, chicken pox, small pox, diphtheria, scarlet fever, mumps, whooping cough, influenza, tuberculosis, leprosy, cerebrospinal meningitis, poliomyelitis, glanders, and

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weather and disease. It does not follow that, because these are classified as respiratory infections, there are not other avenues of infection, as thru the skin in leprosy, and the mouth may be included as a port of entry, as well as the nose, in most cases.

The history of each infection is very fully dwelt upon, as only in that way can the epidemiology be fully understood. The symtomatology and pathology are also very carefully considered in most cases, in order that the diagnosis may be positive. The preventive use of vaccination in whooping cough is considered rather unsatisfactory, and a vaccine over a week old is thought by many to be of little value. Scarlet fever is characterized as a "neighborly disease" in being spread thru contact by exchange of infected things between houses, while measles is said to be a "visitors' disease," in being contracted by a person in contact with the air of a room sprayed with floating organisms.

These volumes promise to be of great practical value and exhibit the erudition, large experience and recognized wisdom of the distinguished author-in-chief. The publishers are likewise to be congratulated in being the means of supplying such a valuable contribution to medical literature. WINSLOW.

The Fundamentals of Bacteriology. By Charles Bradfield Morrey, B.A., M.D., Professor of Bacteriology and Head of the Department in the Ohio State University, Columbus, Ohio. Illustrated with 171 Engravings and 6 Plates. Second Edition, thoroughly Revised. 320 pp. $3.25. Lea & Febiger, Philadelphia and New York, 1921.

As a text book for institutional teaching, this book is excellent. There is a historical introduction, chapters on the morphology and classification of bacteria, their physiology, and a description of the various means and methods utilized in the study of these organisms. The text is clear and concise, the illustrations, chiefly from photographs, are good and the entire work is admirably adapted to the purpose to which it is dedicated. WEST.

The Spleen and Some of Its Diseases. Sir Berkeley Monyhan, of Leeds, England. 129 Pages with 13 full page Diagrams. Philadelphia and London. W. B. Saunders Company. 1921. Cloth. $5.00 net.

The subject is treated with the characteristic precision and thoroness of its author. The easy, free, flowing language makes the reading of the book a delight. The diagrams are well planned to show the relation of the spleen to other organs, also the important pathologic changes in which the spleen is a prominent factor. Surgery of the spleen has in the past occupied a very restricted field. Now we are beginning to realize that this organ plays a considerable part in the etiology of diseases, with which its relation has been little regarded. The conditions in which splenectomy is justified and indicated are carefully treated, and supplemented and supported by important statistical knowledge. The author takes a broad view of the diseases of the spleen and describes the symptomatology which directs our attention to this organ. This book should be carefully read by every surgeon who has not familiarized himself with this important subject.

JOHANSON.

Ringworm and Its Successful Treatment. By John P. Turner, M. D. Medical Inspector of Public Schools, Philadelphia, Pa. Illustrated by 8 Halftone Engravings. 62 pp. $1. F. A. Davis Company, Philadelphia, Pa. 1921.

This little volume is the result of the author's experience in treating thousands of cases of this disease in the public schools of Philadelphia. After giving the history of the disease, with the pathology and diagnosis, a few pages are devoted to treatment which it is stated is invariably successful, if carried out according to instructions. The treatment is divided into four stages of three days each, consisting of the application, after thoro scrubbing, respectively of tincture of iodine, oil of cade, ammoniated mercury and rescorcin ointment. It will pay any physician to read this little book.

SMITH.

South America From the Physician's Point of View. By Franklin K. Martin, C. M. G., M. D., F. A. C. S. Director General American College of Physicians. Managing Editor, Surgery, Gynecology and Obstetrics. Introduction by William J. Mayo, M. D., F. A. C. S. 325 pp. Fleming H. Revell and Company. New York and London. 1922.

This is a very interesting volume, containing a fund of information regarding the republics of South America. Beside chapters written by the author, are others by Drs. W. J. Mayo, T. J. Watkins and F. P. Carrigan. It is the result of voyages, in January of 1920 and 1921, of the committee going in behalf of the American College of Surgeons. The object was to survey medical conditions in these South American countries and the book contains reports on medical schools, hospitals and operating surgeons of the seven countries visited. In addition to the above mentioned reports are interesting descriptions of the leading cities of these countries with sketches of prominent surgeons in each. The text is amplified by numerous illustrations of the cities visited and the medical men described. The volume is well worth reading by everyone interested in the medical affairs and civic conditions of the South American republics. SMITH

Practical Chemical Analysis of Blood. A Book Designed as a Brief Survey of this Subject for Physicians and Laboratory Workers. By Victor Caryl Myers, M. A., Ph. D., Professor of Pathological Chemistry in the New York Postgraduate School and Hospital. Illustrated. 121 pp. $3.00. C. V. Mosby Co., St. Louis. 1921.

It is a pleasure to review a book of this charactor. It substitutes simple, and rapid methods, for previous elaborate and tedious examinations. It is safe to say that the methods here outlined will do more to advance the study of chemical blood conditions than has anything appearing for years. It places chemical blood examinations in the hands of the general practicians and it is from their experiences that the practical, definite, advances of Medicine is made. It is a most excellent work.

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ORIGINAL CONTRIBUTIONS

DIAPHRAGMATIC HERNIA

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That diaphragmatic herniæ are far more common than was formerly believed is amply shown by case reports and recent literature on this subject. The late war, with its enormous number of wounded, has shown that injuries and herniæ of the diaphragm are not infrequent. Heyd[1] states that approximately 10 per cent of all battle wounds involving the thorax were associated with an injury of the diaphragm and abdominal viscera, while 12 per cent of all abdominal wounds were combined with injuries of the diaphragm or chest.

Guthrie[2] pointed out long ago that traumatic perforations of the diaphragm usually do not heal on account of the constant action of this muscle. This fact was later confirmed during the Civil War, in which 126 cases occurred[2]. It is usual for diaphragmatic herniæ to form thru these abnormal openings, the mobile stomach, omentum, colon or other viscera pushing their way into the pleural cavity by aid of the respiratory movements and intraabdominal pressure.

In civil life stab wounds, crushing injuries and other traumatisms affecting the lower thorax and upper abdomen are of every day occurrence, and no doubt many of these injuries affect the diaphragm also, and are followed by diaphragmatic herniæ. The patient may die of this lesion or its complications, or the diagnosis may remain obscure unless cleared up by a careful x-ray examination, which should make a correct diagnosis in every case.

Perforations of the diaphragm may also occur incident to disease, such as the weakening of its structure, or burrowing thru it of pus from an empyema or subphrenic abscess, or from extension of malignant growths. Ulcer of the stomach may cause perforation of the diaphragm and, in twenty-eight of such cases recorded[3], twenty produced direct perforations, while eight caused perforation thru the medium of subphrenic abscesses[3].

The classification of diaphragmatic herniæ has remained unchanged since it was first made and published by Cooper in his book on hernia in 1804. Cooper classified these herniæ into: (1) Congenital, (2) traumatic and (3) acquired. He further divided them into true and false, the true herniæ possessing sacs. True diaphragmatic herniæ are rare. Grosser and Thoma[4] collected 433 cases, 232 of which were congenital, and 181 acquired and in this series but 30 of the congenital, and 10 of the acquired types were true herniæ. Lacher[3] collected 150 cases of acquired herniæ, in which but three possessed sacs. The congenital type is usually found post-mortem, while the traumatic and acquired types are usually those met with clinically. These types occur thru perforations or weakened portions of the diaphragm, and in true herniæ form in much the same manner as do ventral herniæ, a sac being pushed thru the opening into the pleural cavity. In false herniæ the peritoneum becomes fused with the pleura around the thickened margin of the diaphragmatic opening.

According to Ferguson[6] acquired herniæ usually occur in the following areas of the diaphragm, in the order of their frequency: (1) Central tendon, (2) muscular portion, posterior inferior, (3) sternocostal fissures, (4) esophageal opening, (5) lumboscostal fissure, (6) sympathetic nerve trunk openings, (7) aortic opening, (8) psoas muscle opening, and, (9) opening thru which the quadratus lumborum muscle passes[6].

Huffman[5] has recently pointed out that frequently the esophageal opening is congenitally weak in its development, which predisposes to hernia formation in this region. Bevan[7] believes that the majority of acquired herniæ occur at this opening, and also that they possess sacs.

Herniæ of the diaphragm usually occur on the left side of this structure, usually in the proportion of two to one in the congenital type, and six to one in the acquired and traumatic types[8]. The reasons for this are quite apparent. The liver acts as a barrier on the right side, while traumatisms, such as stab wounds, usually occur on the left side, and the stomach or other viscera readily find their way thru perforations in this region. The organs usually found in these herniæ are the stomach, omentum and colon, altho the small intestines or other organs of the upper abdomen have been found in rare cases.

The symptoms and physical findings of diaphragmatic herniæ are variable and indefinite. They have been well discussed in the articles of Giffin[21] and Soresi[20], and I will not go into their details here. These cases, however, are seldom diagnosed without the aid of the x-rays. The symptoms and physical findings depend upon various factors, such as the size and location of the lesion, the viscera contained in it, the amount of constriction of the diaphragmatic opening, whether or not the hernia is free or incarcerated, the amount of traction exerted by the herniated viscera on other organs, and pressure symptoms caused by the herniated mass itself.

Symptoms in traumatic cases may be due to injuries of other viscera or organs, and may mask the diaphragmatic lesion which, however, manifests itself later. In general, symptoms may be mild or extremely severe, and may vary markedly in the same patient at different times, and some cases have no symptoms until taken with acute intestinal obstruction, or they may die of some intercurrent disease, and the hernia be found only at autopsy. Gastric symptoms as nausea and vomiting are usually conspicuous, as the stomach is the organ most frequently involved in the hernia. Symptoms of pyloric or intestinal obstruction may predominate, or they may simulate those of gastric ulcer or gall-bladder disease. Dyspnea, cyanosis and cardiac embarrassment are often early and persistent symptoms[3]. There are, however, no cardinal symptoms to indicate the presence of diaphragmatic hernia in all cases.

The physical findings are usually more definite than the symptoms. Respiration is usually costal, and more marked on the side opposite the hernia. In thin subjects the absence of Litten's sign can usually be detected. The heart is usually displaced to the right, and the apex may be pushed backward or displaced from its normal position. On percussion tympany frequently occurs over the hernia, or there may be dullness when the herniated organ is filled. On ausculation gurgling or succussion sounds are heard over the herniated area. In one of the cases I will report, swallowed air could be distinctly heard entering the herniated stomach in the region of the fifth interspace and in front of the anterior axillary line. Downes[9] refers to several cases of diaphragmatic herniæ which were mistaken for cases of pyopneumothorax and aspirated with resulting death. After all, while the symptoms and physical findings may point toward a diaphragmatic hernia, this diagnosis must nearly always be questionable until proven by the x-ray.

The usual complications of diaphragmatic hernia are incarceration or intestinal obstruction. The latter is responsible for the high mortality of this condition. Gastric ulcer was noted as a complication by Klaggs[10] in 1904 and later by Balfour and others. Dr. S. C. Slocum[2] and Geo. F. Kohler[12] of this city have each reported cases, in which this complication occurred. As previously stated, gastric ulcer has, on the other hand, caused perforation of the diaphragm with resulting hernia[3]. In one of the cases I will report starvation almost produced the patient's death, as her stomach finally became intolerant to all food and even sips of hot water.

Of the relatively large number of cases of diaphragmatic hernia already reported, but a very small number have been operated on. One of the first successful operations for this lesion was performed by Postempski, as noted by Ashurst[13], in 1889. Vayhinger[14], in 1906, collected 77 cases which had been operated on. Frank[16] recently stated that, after a very careful search of the literature, he could find but 94 cases which had come to operation. I believe that many additional cases have been operated on which have not as yet been reported, particularly in the military hospitals, where large numbers of diaphragmatic lesions were treated during the recent war.

In conversing with several colleagues in Portland, I find that at least five cases have been observed here, while but two of them have been reported. Dr. Bilderbach had a case of congenital diaphragmatic hernia, situated on the right side of this structure. A case of traumatic diaphragmatic hernia was recently reported by Dr. S. C. Slocum, as mentioned above, and Dr. Geo. F. Kohler[12] reported a case in 1917. Dr. Dorwin Palmer has observed two additional cases in his practice, and Dr. Diemer, in a series of 700 x-ray examinations, made at Camp Lewis of wounded soldiers returned from overseas, observed six cases of traumatic diaphragmatic hernia. It is probable, therefore, that diaphragmatic herniæ are more frequent than is commonly supposed, and also that the majority of the cases are first recognized by the radiologists.

The surgical procedures used in dealing with this condition are well known, and have been well described in the literature. Some operators, as Binnie[17], Lejars[18], Heyd[1], Vayhinger[14], and others, favor the transpleural method, while other authorities, as Ferguson[6], Bevan[7], Downes[9], and others, favor the abdominal route. In exceedingly difficult cases both the transpleural and abdominal incisions have been combined. It seems to be the consensus of opinion, especially among the military surgeons, that in wounds of the diaphragm the transpleural method is the one of choice. Injured abdominal viscera were usually repaired thru the diaphragmatic opening, which was frequently enlarged to give a better exposure. In acquired herniae the choice of method depends on the location of the hernia, and whether or not it is complicated by intestinal obstruction. In cases following empyema, and in others where the parietal and visceral pleurae are adherent, the abdominal route should be the one of choice.

The increased mortality of the abdominal method over the transpleural, as indicated in the statistics, is no doubt due to the fact that practically all the cases complicated by intestinal obstruction were operated on thru the abdomen. Scudder[15], in discussing the results of 53 operations, states that 39 of these patients died. The transpleural route was used in 11 cases, of which 4 died. The abdominal route was used in 42 cases, of which 35 died, but 47 of these 53 cases were operated on for acute intestinal obstruction. Without complications there should be but little difference in the mortality rate of the two methods.

I have two cases of diaphragmatic hernia to report. One was a traumatic hernia following a stab wound, and the other an acquired hernia following an empyema.

Case 1. Traumatic type. Mrs. R. W., aged 40. During a violent quarrel with her husband in 1914, she was stabbed with a stiletto in the left side near the posterior axillary line and between the seventh and eighth ribs. The point of the knife penetrated the thorax in an inward and downward direction. The patient was taken to the hospital, where the skin wound was sutured by the interne. I saw her about an hour later, when she was suffering from hemorrhage from the cut intereostal artery. The left pleural cavity was filled with blood. I reopened the wound and sutured the bleeding vessel and left a small gutta percha drain in the lower angle of the wound.

The patient gradually improved from her shock and complained of no unusual symptoms until the fifth day after her injury. At this time she was sitting up in bed eating her breakfast, when she was suddenly taken with a severe choking spell and pain in the wound. She was given a glass of water to drink, but complained immediately that she could feel it run out of the wound. The dressing was changed, and not only had the water come thru the wound, but particles of her breakfast food had come thru also. From this time, until she was operated on several days later, the greater portion of everything she would eat or drink, would almost immediately escape thru the wound.

An x-ray examination was made by Dr. R. C. Walker, and a gastric fistula was disclosed, the tract running from the cardiac end of the stomach thru the diaphragm and pleura to the outside wound. Part of the barium meal, however, went thru the pylorus. Dr. R. C. Coffey was called in consultation and advised opening and packing the wound. This he did on the following day, resecting about six inches of the seventh, eighth and ninth ribs over the fistulous opening, after which the wound was packed with gauze. This plugged the small fistulous opening thru the diaphragm, and the wound gradually healed in by granulation, the gauze packs being changed frequently.

The convalescence was long drawn out, but the patient finally left the hospital with the wound entirely healed. She complained of gastric distress after eating, and particularly of belching. She frequently felt nauseated, and occasionally vomited. This gastric distress was more marked while lying down. At times, however, all symptoms would disappear and she would feel well for several days at a time. On account of her persistent gastric symptoms another x-ray examination was made several months later and this showed the presence of diaphragmatic hernia thru the old wound. A part of the stomach was in the pleural cavity. The patient refused further operative treatment, and subsequently passed from my observation.

Case 2. Acquired type. Mrs. J. H. B., aged 45. Had never had previous illness of any consequence until June, 1917. At that time she took suddenly sick with a chill and a pain in her left shoulder. She became feverish and the breathing became painful. She had no cough or other symptoms. A diagnosis of empyema was finally made, and a quantity of pus was aspirated from the left pleural cavity. This aspiration was repeated ten days later and another large quantity of pus was withdrawn. This second aspiration was followed by severe reaction, and three days later a portion of the eighth rib was resected in the midaxillary line, and tube drainage installed.

She was in precarious condition for the following two weeks, and during this time the drainage was profuse. At this time an abscess formed near the costal cartilage of the eighth rib, and was opened and drained. For the next ten months the drainage continued profusely from both openings. The pleural cavity was then irrigated with Dakin's solution, and the wound was healed in five weeks.

The patient then returned home from the hospital with but a small sinus draining near the costal cartilage of the eighth rib. Three weeks later this rib was resected for necrosis. Her recovery from this operation was uneventful, and the sinus healed.

During the next two years she enjoyed excellent health, her weight increased to 113 lbs. and she had no symptoms of any kind. But in May, 1920, she took suddenly ill one evening, with a violent pain in the epigastrium, followed by nausea and vomiting. She then began to complain of gas on her stomach, and belched large quantities. This acute illness came on while she was quiet, and was not preceded by lifting or other trauma. She recovered from this attack and had no symptoms until a week later, at which time she developed a similar attack. This also occurred in the evening, and was relieved after vomiting.

These attacks recurred and the intervals between them became shorter and shorter, until she began to have almost continuous gastric distress. At odd times, however, her symptoms would suddenly leave and she would go a day or two before they recurred. Her stomach gradually became intolerant to food, and she began to lose weight rapidly and, when I first saw her, she weighed but 72 lbs. Her almost continuous gastric distress and increasing weakness finally caused her to remain in bed, altho she could walk a little with assistance. During her attacks she would frequently vomit quantities of food she had eaten several days previously, altho none of this was raised during the intervening attacks. She was habitually constipated.

I first saw her on December 8, 1920. She was confined to her bed, and had the general appearance of a case of starvation. On examination her chest findings were of special interest. The right side showed increased costal breathing, while the costal breathing on the left side was shallow. Litten's sign was absent. The apex beat was not visible. On palpation tactile fremitus was normal, except over an area anterior to the left mid-axillary line and below the fourth rib, where it seemed to be decreased. Percussion of the right lung was negative. The heart dullness showed a displacment of this organ to the right of the sternum, and the apex could not be outlined. The percussion note was apparently normal over the left upper lobe, but was decidedly tympanitic over the left lower lobe below the fifth rib, and over an area extending from the midaxillary line to the left sternal line in front. On ausculation, gurgling sounds were heard, and when the patient would swallow air, this could be heard entering the area above outlined. Succussion sounds were not obtained. The findings were distinct on account of the extreme emaciation of the patient. The abdomen was negative except for a slight epigastric tenderness. The temperature was normal and the pulse averaged around 90.

The patient was x-rayed by Dr. F. Diemer on December 9, 1920. On flouroscopic examination, he found that, with the patient in the reclining position, all of the stomach, except the pyloric end, entered the pleural cavity thru a large opening in the dome of the left side of the diaphragm. When the patient stood up, a portion of the stomach would reenter the abdomen. No other viscera were contained in the hernia.

The patient entered Emanuel Hospital on December 11, 1920, and on December 12, I operated on her, with Dr. C. S. Menzies assisting. A hypodermic of morphine, gr. 1-4, and atropine, gr. 1-150, was given one-half hour before the operation. Ether was given by the open-drop method. The patient was placed in a slight reversed Trendelenburg position, tilted on her

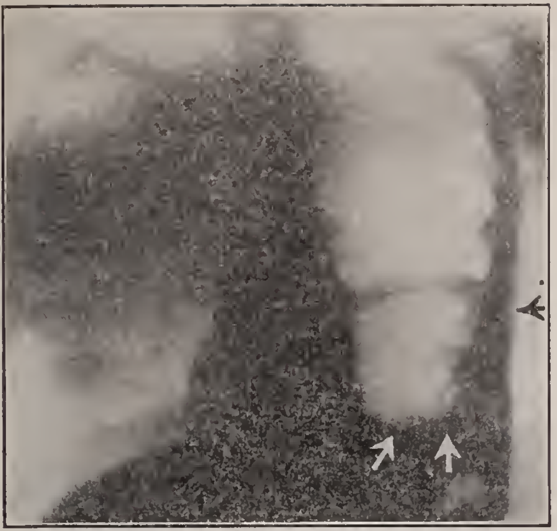

Fig. 1 (Case 2): Before operation. Lower arrows indicate diaphragm. Upper arrow indicates stomach in thorax.

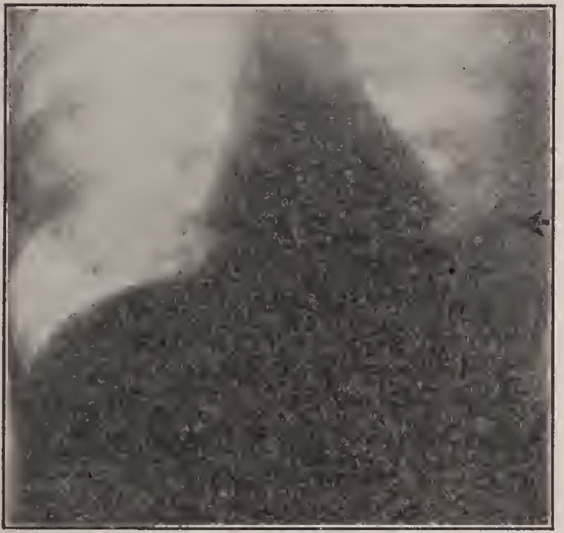

Fig. 2 (Case 2): One year after operating. Arrow indicates high attachment of diaphragm.

right side. The x-ray examination had shown the line of diaphragmatic attachment high up between the seventh and eighth ribs, as a result of her old empyema.

Our incision was made below this level, over the ninth rib, a small segment of which was resected near its cartilaginous end. The peritoneum was then entered, and the incision enlarged, keeping it one inch below and parallel to the diaphragmatic attachment. The tenth rib was then severed near its cartilaginous end, and this allowed of wide retraction of the wound without the use of rib spreaders. The field of operation in the vault of the diaphragm was immediately exposed and was within easy reach. The omentum was found extending thru the diaphragmatic opening and attached to the parietal pleura. This was freed and returned to the abdominal cavity. The stomach was then withdrawn from the thorax and packed out of the way with gauze. The diaphragmatic defect was then fully exposed and within easy reach. No sac was present, but the peritoneum was fused with the pleura around the thickened margin of the opening, which was situated in the dome of the diaphragm in the left part of the central tendon. This opening was perfectly round and was about two and one-half inches in diameter. The heart, which was displaced to the right, could be seen pulsating at its internal margin.

Several interrupted No. 2 chromic catgut sutures were then used to close the opening, which was brought together with no tension whatever. A second row of superimposed sutures was then introduced, and this was also brought in apposition without tension. The diaphragm seemed lax. The stomach was not sutured over this area, but recent x-ray examination shows it to be adherent in this region. The peritoneum and wound were then closed in the usual manner. The patient recovered from the operation without shock in spite of her weakened condition. For the next ten days all food and liquids had to be given per rectum, as her stomach continued to be intolerant. Sips of hot water were finally retained, and other liquids were added as the stomach condition improved. In three weeks the patient was on soft diet, and at the end of a month we were overfeeding her.

From this time on, she has had no gastric symptoms, altho Dr. Diemer states she is a persistent swallower of air. Previous to her operation, she weighed but 72 lbs., but when she left the hospital, twelve weeks later, she weighed 100½ lbs. This has since increased to 115 lbs., which is more than she has weighed for years. Her convalescence was not as smooth as might be inferred, however. She developed an erysipeloid wound infection, which spread over the greater part of her body. This was followed by the formation of abscesses over both anterior superior spines, both trochanters and over the sacrum. These were opened and drained, and cultures of the pus showed streptococci. In addition, the old empyema recurred, and was drained thru a small opening made in the midaxillary line. The pleural cavity was then irrigated with Dakin's solution for a week, after which it was filled with Beck's paste. This immediately stopped the drainage and resulted in the cure of the empyema.

I think one of the important points to be learned from this case is the method of approach used in the operation. I believe, had we used the transpleural route, the operation would have been very difficult on account of a thickened and probably adherent pleura. Also the traumatism might have caused a recurrence of the empyema, which did not recur in spite of our not injuring the pleura. Had we used the left rectus or Bevan incision, the exposure of the hernial opening in the vault of the diaphragm would have been very difficult, as this was abnormally high under the costal arch, due to the high attachment of the diaphragm to the parietal pleura as a result of the empyema she had had three years previously.

It seems, therefore, that in cases of this type, at least, the transcostal abdominal method of exposure is ideal. It is also conceivable that this operation could be used in many other cases, where either the transpleural or abdominal routes would be extremely difficult, and done in two stages, the first stage to elevate the costal attachment of the diaphragm by making a transpleural incision over the seventh rib, and suturing the diaphragm high up to the parietal pleura. This is not difficult, as has been shown by De Page and Heyd in the treatment of war wounds near the margin of the diaphragmatic attachment. The second stage could be done later after the method I described, repairing the hernia trancostally but below the diaphragmatic attachment. This gives a splendid exposure of the field of operation.

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A ROENTGENOLOGIC REVIEW OF 750 GASTROINTESTINAL EXAMINATIONS*

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Day after day a roentgenologist has referred to him patients seeking a diagnosis for gastric disturbances. He can demonstrate organic gastric pathology in only 10 to 12 per cent, and he wonders what becomes of the vast majority. The object in presenting the statistical study of this series of cases is to bring before your attention the value of carefully tabulated roentgenologic records of those patients presenting the ordinary run of gastric complaints. The radiologist may thus follow the ultimate diagnosis of his negative as well as his positive examinations.

It is now universally recognized that 85 to 90 per cent of patients suffering from stomach complaints have no organic gastric lesion, but suffer from the results of functional disturbances within the stomach or from extrinsic causes. With a clearer realization of this fact, roentgenologists will be better equipped to perform their duty as special diagnosticians by stimulating their medical and surgical colleagues to the indispensible value of making a routine examination on all such patients. They will thus be saved the ever distasteful request to "take a picture of a stomach" or, after having reported a negative examination, to learn that the man who referred the case has told the patient there is nothing the matter with the stomach.

Gastrointestinal diagnosis is rapidly approaching an exact science. The day of haphazard and laparotomy diagnosis is graciously passing into oblivion. The more one is versed in abdominal complaints, the more thoro will be his examination before expressing an opinion.

Four cardinal factors are eminently necessary in arriving at an abdominal diagnosis, the omission of any one being a serious break in our diagnostic chain. Every case must have a careful detailed history, a complete physical examination, all necessary laboratory tests and a routine roentgenologic examination, and by these means only are we able to give our patient that to which he is justly entitled. Employing all these, mistakes will occur, but we can conservatively say that our errors will be reduced to a minimum and shall have the satisfaction of knowing we have done our best.

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* Read before Pierce County Medical Society, Tacoma, Wash., February, 1921.

* From Mason-Blackford-Dowling Clinic.

A good history still remains the keystone in the diagnostic arch of general gastric complaints, and the more exacting the history the better will be our percentage of correct diagnoses. I by no means wish to infer that certain gastric lesions can always be diagnosed by correspondence, for I have seen gastroduodenal pathology without presenting the so-called specific history, and have also seen x-ray negative stomachs, proven so by operation, which gave the so-called typical history, but these are comparatively few and far between. It is relatively rare to find gastric pathology without a typical history and the converse is just as true.

Given those cases presenting organic gastric lesions, the roentgenologic diagnosis ranks supreme, providing always that the examiner adheres strictly to those now well established and proven axioms of roentgen diagnosis. There is no speciality known to medical science which can do as much harm as radiology, if it is injudiciously employed.

The x-ray diagnoses of these 750 consecutive cases presented the following percentages:

Esophageal, gastric and duodenal pathology occurred in 91 patients, or 12.1 per cent of the series. Ten patients showed x-ray pathology of the colon, making a total of 101 patients, or 13.7 per cent of the 750 presenting gastric symptoms who gave x-ray pathology.

I have purposely omitted the radiologic diagnosis of chronic appendicitis which I believe has not as yet been placed on sufficient scientific basis to justify this examination as a routine procedure, but prefer at present to permit the clinician to arrive at this diagnosis after excluding the other possible factors causing gastric disturbances.

There were 48 duodenal ulcers, comprising 6.4 per cent of the total patients examined; 9 gastric ulcers, or 1.2 per cent; 22 carcinomas of the stomach, or 2.5 per cent; 1 organic syphilis of the stomach; 3 carcinomas of the esophagus; 1 primary diverticulum of the esophagus; 1 cardiospasm; 1 esophageal stricture due to lye; 3 congenital hypertrophic stenoses and 1 viscious circle.

The ten x-ray pathologic colons examined by means of the barium enema gave 3 carcinomas, 1 diverticulitis, 5 chronic ulcerative colitis, and 1 incompetent ileocaecal valve of the third degree. The ultimate clinical diagnoses of the cases with negative x-ray findings, based on a complete routine examination, were:

Reflex gastric group, consisting of: appendix 55, gall-bladder 105, chronic constipation 61, colitis 12, pelvic 11.

Extragastric group, consisting of: pernicious anemia 5, lues 15, tabes 3, heart 20, lungs 23, kidneys 25, migraine 12, others 16.

Functional group, consisting of: neurosis 117, hyperacidity 32, achylia 37, psychic 7.

Unclassified and post operative 68.

There were two medical diagnoses of duodenal ulcer and one gastric ulcer not demonstrated by the x-ray. One duodenal ulcer was proven at operation; the remaining two cases have not yet been operated on.

Before briefly discussing some of the most salient roentgenologic factors of gastrointestinal pathology, it may be of interest to mention the gastric analysis of this series. The average free HC1 was 20, total acids 35. Our highest acidity was total acids 184, free HC1 86. The 15 highest analyses show 10 with no evident pathology and the 5 highest analyses occurred in cases which after careful investigation could only be called "functional hyperacidity." The average duodenal ulcer acidity was free HC1 41 and total acidity 56. In comparing gastric and duodenal ulcer acidity, it is practically a constant fact that the lower the ulcer is situated the higher the acids. The coincidence of gastric analysis with organic gastric pathology serves fairly well as a working basis, but gradually the fact has been evolved that the results of routine gastric analysis itself, while essential on account of its cooperative value in most instances, is of secondary diagnostic importance. It is an aid but by no means a law.

Duodenal ulcer is the most frequent organic gastric lesion causing stomach symptoms. Forty-eight occurred in this series, comprising 6.4 per cent of the patients seeking relief for their stomach, and were five times more frequent than gastric ulcer. The average duration of symptoms was 13 years and the average age 41 years.

Twenty-one patients with an x-ray diagnosis of duodenal ulcer were operated on and an ulcer found in each case. One patient with a negative x-ray report was found at operation to have a duodenal ulcer, making a roentgenologic diagnosis of 21 out of 22 ulcers found at operation, or 95.5 per cent diagnosis.

The roentgenologic diagnosis of duodenal ulcer has within the past few years been placed on a scientific basis, providing always that the examiner follows a definite routine in his examination, and the more he deviates from this routine the larger will be his percentage of errors. A deformed duodenal cap is by far the most significant sign, but such a deformed cap should by no means on the first examination be construed as always indicating ulcer. The stomach, we all agree, is very frequently the playground of a multitude of extrinsic manifestations and the duodenum, its neighbor, separated only by a sphincter, must logically bear some of its burden. Practically all of the duodenal deformity is due solely to spasm. We do not see the ulcer except in rare instances, but what we see is the spasm, the result of the ulcer.

I do not mean to infer that the spastic deformity of the duodenum is frequently due to extrinsic causes; it is comparatively uncommon. Theoretically it should be true, as we have all seen extrinsic spasm in the stomach and other portions of the alimentary canal and the duodenum should be no exception.

What I wish to bring out is that many deformed caps, which may simulate ulcer due to incomplete filling of the bulb or rapid evacuation of the duodenum, which are frequently the result of reflex stomachs due to hypertonicity, hyperperistalysis gastro- and pylorospasm will, on reexaminating, after having employed an anitspasmodic, enable one to obtain a definitely outlined cap. The presence of an unchanging bulbar deformity can safely be assumed to be due to an intrinsic cause.

I have been accused of being too enthusiastic concerning antispasmodics and extrinsic spasm. I may be, but would rather err on the side of safety, and the more of such cases I see the more convinced I become that the elimination of extrinsic spasm is the sheet-anchor of gastrointestinal roentgenology. It is better to all concerned to fail to find benign pathology than to find that which does not exist. Sixteen of these duodenal ulcer patients had previously been operated on for appendicitis.

There is great similarity existing in the histories of chronic appendicitis and duodenal ulcer and the element of error is greatest in dealing with these two conditions. A chronic appendix will in many instances give a very suggestive roentgenologic picture of duodenal ulcer, but after the administration of belladonna and on reexamination no sign of ulcer is to be seen. We practically always make it a routine of reexamining all patients showing a deformed cap and spasmodic stomach, which has on several occasions changed our diagnosis, and I believe there is little excuse to offer when an appendix is found in place of an ulcer.

Gastric ulcer was found in nine patients, or 1.2 per cent, and as a rule does not present as many pit-falls to correct diagnosis as do ulcers in the duodenum, owing to the fact that gastric ulcers generally show a crater on the lesser curvature.

Ulcers situated on the posterior wall present the greatest difficulty in x-ray diagnosis of gastric ulcers, and fortunately occur in only 11 per cent of all gastric ulcers. Three posterior ulcers were found in the series; one was not diagnosed and two were diagnosed by the x-ray. Given a stomach presenting a good history of ulcer, showing a negative duodenum and gastric outline, accompanied as a rule by gastric retention, hyperperistalsis and spasmodic stomach, which persists after the proper administration of belladonna, means a surgical stomach and generally a posterior ulcer. Seventy-five per cent of posterior ulcers, according to W. J. Mayo, occur on the middle third of the stomach, 16 per cent on the upper third, and by far least frequent toward the pylorous.

Carcinoma of the stomach occurred in 22 patients, or 2.5 per cent, and no method can compare as favorably from the standpoint of early diagnosis as roentgenology. Notwithstanding the accuracy of x-ray diagnosis of this grave condition, we cannot but feel badly on learning that 50 per cent of all carcinomas of the stomach are inoperable at the time the diagnosis is made.

Two patients in this series had a previous x-ray diagnosis of carcinoma of the stomach, both of which we found negative. One was a case of pernicious anemia, presenting all the objective signs of a malignancy, superimposed by a radiograph, showing a so-called marked filling defect which really was due to pressure of the spine. The other was a gall-bladder, causing a marked extrinsic spasm which failed to appear on re-examination.

All patients over forty, suddenly presenting stomach symptoms, should have a roentgen examination and the radiologist is never justified in giving a negative diagnosis, unless he has also examined the patient in a prone position to exclude carcinoma of the cardia, a condition often overlooked. With a suggestive history of abdominal malignancy and a negative stomach, one should never fail to examine the colon by means of a barium enema.

Organic syphilis of the stomach occurred in one patient and brings up thie question of differentiating this condition from carcinoma. These two conditions cannot be positively differentiated by the x-ray alone, but the x-ray findings, correlated with the clinical and laboratory findings, give a very safe working basis.

No paper on gastroenterology appears complete without dealing to some extent with the position and shape of the stomach. I mention gastric and colonic ptosis, as generally understood, merely to condemn it. I grant in a few rare instances that an extremely prolapsed stomach and colon, causing considerable retention which is very uncommon, may be significant, but I believe our patients as a whole would be greatly benefited if we would forget that such a condition was ever described. It is not uncommon to have a patient enter your office, carrying several x-ray plates, woefully lamenting that "his stomach has fallen." We cannot blame the patient, but must shoulder all the responsibility ourselves.

There is no definite anatomic position of the stomach. The former textbook description that the stomach should lie within the lesser curvature practically on a plane with the umbilicus has many years ago, due to roentgen examination, been disproven. Seventy-five to eighty per cent of patients examined in the erect position, after having taken a barium meal, will show the stomach to occupy a considerable lower level.

The position a stomach occupies in the abdomen, generally speaking, is as characteristic to that particular patient as the shape of her nose or the color of her hair. In fact it would be pathologic to find a high steer-horn stomach in a tall, slender patient. The colon likewise, being freely moveable, suspended like a hammock from both ends, must naturally in a thin patient follow the laws of gravity.

The clinical conception of gastroptosis was based originally on the physical signs obtained after inflation of the stomach, the patient usually being examined in the recumbent position. The stomach was outlined by percussion and the umbilical level was taken as the normal limit of the lower gastric pole. Descent of the greater curvature below this was regarded as indicative of gastroptosis.

Recent writers on disease of the stomach speak guardedly of ptosis. Bassler says that "the special objective signs that constitute a prolapsed stomach are to some extent still a matter of personal equation with each observer." Stockton states that "gastroptosis is usually unaccompanied by symptoms sufficiently specific to lead one to suspect its presence."

The few present day advocates of gastroptosis rest their claim on the assumption of gastric drainage by gravity, a conception which Cannon regards as unfortunate. The functioning of the pylorous and the gastric tone have far more influence upon gastric motility than the heighth of the pylorus above the lower pole. The low-lying stomach, in accordance with the general musculature of such patients, is usually hypotonic, and for this reason is likely to show, in an extremely small percentage, a moderate delay in evacuation. "The chief reason for the diagnosis of ptosis is the lack of familiarity with the numerous pathologic lesions of the digestive tract or external to it, which give rise to gastric symptoms. Over-enthusiastic use of the roentgen ray in the search of gastrointestinal abnormalities is seldom unrewarded, and some degree of "gastroptosis" is the rule rather than the exception.

"These asthenic patients cannot be cured by any method of gastric fixation, for we cannot as yet regard the stomach as simply an anatomic pouch because its functions are physiologic, and any surgical attempt to improve the impairment of the motor function at the expense of the natural movability of the organ is working contrary to nature."*

To tell an already neurotic patient that she has "a fallen stomach" is to immediately convert her into a confirmed neurasthenic, which will require the untiring efforts of several physicians before such an idea can be eradicated, if she has not by that time resorted to christian science.

SUMMARY

1. To find organic gastric pathology in those patients complaining of general stomach symptoms is an exception rather than a rule. Eighty-five to 90 per cent have no organic basis in their stomachs to account for their symptoms. The large majority fall under the head of extra-gastric and functional.

2. When a reflex stomach may account for the roentgen findings, all such patients should be reexamined after having been properly instructed to take an antispasmodic which will occasionally prevent a needless gastric operation.

3. The earlier employment of the roentgen ray is urged as a means of diagnosing early carcinoma, whereby the percentage of inoperable carcinomas of the stomach may be lessened at the time the diagnosis is made.

4. Syphilis of the stomach should be differentiated from carcinoma before operation, or at least this condition should be strongly suspected and the patient placed under careful clinical observation before operation is advised.

5. If we must consider gastroptosis as a clinical entity, let us impart our findings to the physician, but abstain from describing such a condition to the patient.

6. The roentgen examination of organic conditions of the gastrointestinal tract, if properly employed, is the most potent single method of diagnosis. Its negative examinations are a great aid in arriving at an ultimate clinical diagnosis.

7. A roentgenologist should never report that which he does not see. He should never force his x-ray findings to conform with the clinical findings, even tho such findings appear specific. He should hold himself open to just criticisms from the internist and surgeon, remembering that either side is capable of error. What an internist or surgeon wants in an x-ray report is brevity. A radiologist should make a positive or negative diagnosis, or if in doubt call it indeterminate, and not go into an exhaustive treatise of all the roentgen signs which as a rule only serve to confuse the physician who referred the case.

8. Roentgenology is not a mysterious science, whereby the examiner can always find pathology if it exists. The operating room illuminates many mistaken diagnoses of roentgenologists as well as clinicians, and a man who does not make occasional mistakes in diagnosis has had few patients to examine.

Whenever possible, one should follow his patients to the operating room, where he will learn almost as much roentgenology as examining them behind the screen.

GASTRIC AND DUODENAL ULCER*

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My first gastroenterostomy for ulcer was done in Baltimore, at the University Hospital, in 1904. Shortly following I did a second at the same place. These cases I have lost track of, but the first one some months later had an enteroenterostomy done by Dr. Mason Hundley of that city. These cases I remember very distinctly. I used a long loop and made a posterior anastomosis in three layers, using a silk running stitch, and tying every third or fourth one. We had no clamps of any description, so the bowel and stomach were held in apposition by assistants' fingers, while the sewing was being done, a most tiring position, having done this on several occasions myself.

I wish briefly to present sixty cases, forty-two duodenal and eighteen gastric ulcers. A gastroenterostomy was done in all, plus various procedures which were done on the ulcers. In the majority of these cases the ulcer was not disturbed. A few were inverted with interrupted suturing. A number of ulcers were resected, and a few cauterized in both duodenum and stomach. In this number there were four pyloric closures and one resection of the pylorus. Other work done at the same time was two cholecystotomies, three cholecystectomies, one double herniotomy, and always appendectomy, unless there was some special contraindication, or it had been removed before which was often the case. In this number there were two perforated gastric and six perforated doudenal ulcers.

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* Carman and Miller—Roentgen Diagnosis of Diseases of the Alimentary Canal.

* Read before Spokane County Medical Society, Spokane, Wash., March 10, 1921.

I prepared a questionnaire and endeavored to obtain as much information as possible in regard to the condition of my patients since their operations. These reports I have been greatly pleased with, and am reporting results in the number from which I have heard. A number of these letters were returned unclaimed and these of course will be excluded. Ninety per cent of the cases heard from were practically cured, as their reports read "cured" or statements equivalent to that. The remaining ten per cent claimed improvement, with the exception of three who reported condition about the same. These I have classed as unimproved. I appreciate that the results above reported are at variance with other published statistics, as well as the proportionate number of gastric and duodenal ulcers. On the strength of these cases I wish briefly to review the subject of gastric and duodenal ulcer.

There has been a radical change in the etiology, diagnosis and treatment of these troubles in the past few years, and there is still great diversity of opinion as to the proper treatment. As regards etiology, we have for a long time been trying to find out the causes, but most of our theories have not been able to stand the test of time. Some of the supposed causes are infections, trauma, acid gastric juice, thrombosis, hypervagatonia, derangement of the endocrine system, and the weakened condition of the mucosa cells in their ability to obtain antipeptic and antitryptic substances from the blood. These do not explain all ulcers, and they are today by many considered as secondary factors or the result of other conditions.

Abrasions of the stomach mucosa occur frequently, but they usually promptly heal, while thrombosis will not occur without some exciting cause. Hyperacidity is now considered by some the result rather than a cause of ulcer, and frequently occurs without ulcer, and the reverse occasionally occurs. We should get away from the idea that these ulcers are merely a local disease, caused by gastric erosion, as there may be a large variety of agents and this lesion may be only a local manifestation of a systemic disturbance.

In his experimental work Rosenow has isolated a not very virulent streptococcus from the tonsils, teeth and sinuses, injected the same into animals and produced ulcers in the stomach and duodenum and then isolated the organism from the ulcer. This surely is very convincing. He further thinks the thrombosis, considered by Virchow as the cause of peptic ulcers, is itself the result of septicemia. While this may not be the only cause, I feel that it certainly is a very important one.

The diagnosis of the gastric and duodenal ulcer is best made by a careful analysis of the symptoms; second, by physical examination; third, by chemical examination of the stomach contents; fourth, the last but often the most positive evidence, the roentgenologic examination.

In summing up the diagnosis of ulcer Dr. W. F. Chenny has said: "We have heretofore been too ready to diagnose ulcer when it did not exist, because the history was typical, but now we have learned how many other conditions may simulate this history, and we demand other data in addition to the patient's story. On the other hand, when the history was not typical, ulcer was not suggested by it, and we were likely to overlook its existence because our other means of recognition were so meagre.

"Now we have learned that the patient's story of his ailment is not always the same; that some feel less discomfort from an ulcer than others do, and that only a part of the classic symptoms may be present, even when hypercholorhydria is found and roentgenograms show definitely a pyloric defect or a deformed cap. The only way to avoid error, therefore, is to trust to no one element in the diagnosis, but to collect our data by history, by physical examination, by laboratory reports, and by fluoroscopic examinations and roentgenograms, and then to piece these data together to see what they will ultimately make."

The history is of extreme importance, and often the diagnosis can be made from it and the rest of the findings will be confirmatory thereof.

The most common symptom is epigastic pain and distress which comes at regular intervals after taking of food, from one-half to four hours, usually earlier in gastric, one to two hours, and in the duodenal, one to four hours. This discomfort is described by most patients as being a burning and gnawing sensation which can usually be relieved by the taking of food, soda, etc.; along with the discomfort they usually have some eructations, belching of gas and often vomiting.

"The presence of food over the ulcer always gives relief, the acid and pepsin over ulcer in the food-empty stomach or duodenum is the cause of pain. The stomach when empty of food often contains a quantity of gastric secretions induced by pyloric spasm. It is evident that the duodenal alkilis do not respond to gastric acid as do the pancreas and liver." (C. H. Mayo.)

It is often noticeable that gastric ulcers are less annoying as regards discomfort than duodenal. There is often a remission of symptoms in both which varies as to time before they recur. When symptoms are present, coarse or sour foods aggravate them very much and patients learn to avoid them. These intermissions between attacks may be off and on for many years, the attacks becoming more frequent and continuous as the condition becomes chronic.

The physical examination will be often negative, sometimes showing epigastric tenderness only. Gastric analysis usually shows hyperacidity and hypersecretion in about three-fourth of the cases. Hemorrhage occurs in about twenty-five per cent of the cases. In the very chronic cases we may have normal or even subacidity. It has for years past and even is by many today considered that hyperacidity or corrosive effect of HCl is responsible for the ulcers. This is not the accepted theory by all but considered by some as the result. The upholders of this theory, however, are much in the minority.

Some experimental investigators have claimed to have proved this by using much higher titration values in the stomach. These investigations have been made by men such as Pavlow, Carlson, Ivy and Smith. It is claimed that the healthy mucous membrane of the stomach can stand ten times the strength of normal gastric juice without producing ulcer. One of the above investigators has introduced five times the normal strength HCl into the stomach, containing a proven peptic ulcer, without discomfort clinically and without retarding the healing of the ulcer or the production of new ulcer.

Meltzer, Langley, Cannon and others had demonstrated that the stomach and intestine are supplied with sensory nerves, which is contrary to the view formerly held by Lennander. The sensory nerves of the stomach terminate in the muscular coat and do not reach the mucosa. In the region of the ulcer they become supersensitive from inflammation, and the pressure of the peristalsis makes them register pain which, if they were not rendered supersensitive by the inflammation, they would not do. It is claimed by some that the acid erosion of the gastric juices upon the ulcer has nothing to do with the pain, except that the excessively acid gastric juice causes increased peristalsis. Reducing the acidity of the gastric juice by food decreases peristalsis and so lessens pain.

The x-ray I regard as the most important, as about ninety per cent positive diagnosis can be made. A negative finding does not mean or rule out ulcer. We should not consider, if no evidence of ulcer appears from roentgenographic examination, to distrust all other evidences, no matter how convincing it appears. In the past six months I have operated upon two patients with duodenal ulcers symptomatically diagnosed but not confirmed by the x-ray, the ulcer being demonstrated at operation.

As to treatment, this today is a much disputed question, whether surgical or medical, and I am afraid we are inclined to lean a little to the side we are most interested in and familiar with. I believe that the uncomplicated case of short duration belongs to the medical man, and every case should be treated and given a good long trial with diet and medicine before coming to the operating table, and this more so in duodenal ulcer than gastric, on account of the greater possibility of cancer developing on these ulcers in the stomach. It is usual that these cases have gone the rounds of the medical men and dieticians before coming to the surgeon.

The medical treatment is always a very long drawn out affair and hard to tell when one is cured, for the history of these ulcers, whether under treatment or not, as a rule have intermissions of symptoms for weeks or months, and this is kept up for years. I once heard a noted surgeon say he never operated upon an ulcer until it had been cured seven times medically.

Sippy has done much to establish a basis of medical treatment of ulcer. He has shown that pepsin must have free acid above five points (the higher the better), in which to work. His principle of treatment in an attack is to reduce the acid by dilution of food or by neutralization with alkalis every hour during the greater part of the day. Milk and fats dilute the acid and delay digestion with a gradual reduction of acidity. As it is almost out of the question for the ordinary wage earner to carry out the protracted medical treatment, such patients greatly appreciate the relief obtained thru gastroenterostomy and the ability to return to work with the diet that can be obtained by them in their station and environment.

The absolute indications for surgery, as well stated by Gross and Held, are:

1. Cases in which, notwithstanding prolonged medical treatment, occult blood persists, causing a progressive decline in the health of the patient. Such cases must be operated upon without delay for two reasons; because, as first pointed out by Boas, the persistence of occult blood and its common accompaniment, gradual reduction or even disappearance of free acid, may mean carcinoma; also, even without carcinoma, the secondary anemia prevents the healing of the ulcer, and makes medical treatment unsuccessful.

2. Cases in which the history of one or more attacks of excruciating epigastric pain with collapse manifestations indicate threatened perforations, which can now be verified by the x-ray finding of penetrating ulcer.

3. Acute perforation. The sooner the operation is performed the greater the chances for recovery.

4. Marked pyloric stenosis.

5. Organic hour-glass contraction.

6. Cases in which, in addition to the ulcer, there is coexistent appendicitis or disease of the bile passage, with or without stones.

There are some authors who claim that gastroenterostomy for gastric and duodenal ulcer does not restore the stomach to normal physiologic condition; that it is liable to many complications and it fails to completely cure the patient in a considerable number of cases. They, therefore, advocate the doing of some plastic operation whenever it is possible, or resecting the ulcer, whether gastric or duodenal, and not doing more.

I believe, as do the majority of surgeons, that the gastroenterostomy is essential, even tho the resection of the ulcer has been done, as the vast majority of these patients are cured by doing the former, even tho the ulcer is not disturbed.

Finney's gastropyloroplasty is valuable in select cases, but I believe even in these that a gastroenterostomy in the general man's hands will be more successful. Malignancy is such an infrequent occurrence in the duodenum it may hardly be considered. These ulcers may be dissected out or, if inaccessible or not wise to remove, may be cauterized, as advised by Balfour, which destroys considerable tissue and infection, completing the perforation and incidentally stimulating a condition of repair.

In summing up briefly the treatment of these ulcers, all foci of infection should be cleaned up early. All ulcers should be removed if accessible and can be done without undue risk to our patient, or the ulcer might be perforated by the cautery and infolded or infolded alone, but I am of the opinion that a posterior gastroenterostomy should always be done at the same time. The same may be said in regards to gastric ulcer, except it should be removed if practical, on account of the much greater danger of malignancy.

W. P. MacCarty *(A. J. of Roentgenology,* Dec., 1920), claims that any chronic gastric ulcer larger than 2 cm. in diameter is usually but not always carcinomatous. He further claims that every patient harboring a chronic gastric ulcer has the possibility of also harboring a carcinomatous gastric ulcer, the differentiation of which must of necessity be made by the surgical cystopathologist, early cancer being a microscopic lesion. He urges that these ulcers be removed, and his statistics show that some of these cases have lived nine and ten years after resection, that had extensive involvement. There are so many factors connected with resistance to carcinoma that with our present knowledge we cannot always accurately prognosticate.

As to the treatment following operation, a condition which is often neglected by the surgeon, the patient after a couple of weeks is left to drift as he sees fit, and there is much delay in getting his entitled result. I am convinced that a careful, graduated, bland diet for a long time following the operation will do away with much of the discomfort that sometimes arises. I insist that they eat very soft foods for at least two months and tell them to have all foods put thru a sieve before eating and by so doing they can get a greater variety, which under other conditions I would be afraid to let them have.

Since the writing this paper, I have operated on several cases of ulcer, and on two occasions have dissected out duodenal ulcers and sewed the bowel transversely, eliminating the gastroenterostomy. So far these patients have done splendidly. While I appreciate this cannot be done except on selected cases, this procedure appeals to me, especially in young individuals. Where this can be done without causing any obstruction to the duodenum, I certainly would advise it being tried.

MEDICAL TREATMENT OF ULCER OF THE STOMACH AND DUODENUM

Gustave Baar, M. D.
PORTLAND, ORE.

(Translated from the official transactions of the Medical Society of Vienna, Session of December 10, 1920. The Chairman welcomed Dr. Gustave Baar, of Portland, Ore., U.S.A., as guest, In the extended discussion which followed the papers on ulcer of the stomach and duodenum, read by Professors Singer, Finsterer and Denk, occupying six sessions of the Medical Society of Vienna, Dr. Baar took the floor and made the following remarks:)

I wish to thank you for the splendid information I have received from listening to the classic papers read on ulcer of the stomach and duodenum. The new start taken as regards its etiology and surgical treatment (large resection of the stomach, causing postoperative achlorhydria and thus preventing recurrence ot the disease, especially jejunal ulceration), was certainly of great interest to me.

I regret, however, that my Viennese colleagues do not seem to be informed as to the position Amercian physicians and surgeons take toward this very prevalent ailment and take the liberty of giving the following resume:

(1) Surgery. The last article on the subject appeared in *Surgery, Gynecology and Obstetrics,* March, 1920, by Dr. R. C. Coffey, based upon 234 operations. He prefers simple gastroenterostomy as the operation par excellence. It is advocated in every case of ulcer of the stomach, no matter where its location, on account of its low mortality, as well as on account of the ultimate results, giving the lowest percentage of consecutive jejunal ulcers, recurrences, carcinoma, hemorrhages. In cases where the patient does not get entirely relieved of his sufferings, there is still plenty time left to perform an eventual resection or Balfour cautery, procedures which, if performed thus in two stages, are much easier borne.

(2). As to the internal treatment of ulcers of the stomach and duodenum, a considerable change has taken place, inasmuch as the generally accepted antacid method of treatment inaugurated systematically by Sippy (a name I have not heard mentioned, I regret to state, by any one of the gentlemen who have spoken), has caused a well-nigh surprising increase of permanent cures. As to my own experience with this method of treatment, I wish to state that of 380 ulcers (published in my monograph on Indicanuria), which I have diagnosed clinically as well as by using all other known clinical, x-ray and laboratory work, I had to refer 25 cases to the surgeon (Dr. R. C. Coffey). This was the status before I started to use Sippy's method. However, of the more than 1,000 cases of ulcer I have treated since, after Sippy, I did not have to refer more than half a dozen to the surgeon.

Sippy's method is so simple that I must recommend it most emphatically to every practitioner. The patient gets every hour from 7 a. m. to 10 p. m., 180 cc. lukewarm milk; one-half hour after each ingestion he gets one-half teaspoonful of a mixture of equal parts of magnesia ustae, sodium bicarb. or, in case of diarrhea, equal parts of bismuth subnit., sodium bicarb. The chyme remains neutral with this method, which is carried on for several months. Only rarely is it necessary to add nightly lavage with sodium bicarb. solution to make sure of the neutralization of stomach secretion. Gradually only soft and bland diet is added.

It is just like the "egg of Columbus," this method of Sippy's! For it seems to be the generally accepted opinion that every ulcer heals spontaneously, if one only removes the corrosive action of the acid chyme. While thus the Drs. Mayo of Rochester, ten years ago justly, jokingly claimed not to have operated upon any ulcer which had not been "cured" at least seven times by an internist, Sippy of Chicago now affirms, basing this opinion upon the clinical and roentgenologic examination of a tremendously large material, that well-nigh all kinds of ulcer, even the inflammatory, indurated ones of the pylorus and the ones causing pylorospasm, get cured by his method of treatment. Nay, he even goes farther in his claim and states that a large number of his cases are "postoperative" cases. I, too, am of the opinion that only a very small number of all ulcers observed would need surgical treatment, if Sippy's simple method were generally accepted and systematically carried our also here (in Vienna).

NON-SURGICAL DRAINAGE OF THE GALL-BLADDER*

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During the past two or three years this interesting subject has been attracting a great deal of attention from the medical profession. Meltzer[1], in 1917, published his "Law of Contrary Innervation," as applied to the gall-bladder, that is when the sphincter muscle of Oddi relaxes, the gall-bladder contracts, and vice versa. This relaxation of the sphincter and the contraction of the gall-bladder empties the latter into the duodenum. Soon after this Reyfuss and Lyon, but independently, began their investigations and each not only proved the correctness of Meltzer's law but did a large amount of research work and opened a broad field for further investigation.

Since then a number of men have been making studies of the gall-bladder by means of drainage thru the duodenal tube. Enough work has been done to prove it to be a method of diagnostic and therapeutic worth. It is not difficult to do, but requires time, patience, and a careful technic; otherwise the results will be of little value for diagnostic purposes. No breakfast is allowed and the patient is prepared by first washing the mouth, using the tooth brush and some good antiseptic mouth wash. A solution of permanganate of potash or one-half of 1 per cent of formalin may be used. The tube, which has been sterilized by boiling, is then passed into the stomach and the contents, if any, aspirated. This is kept for examination. The stomach is then washed out until the water returns clear. Washed again with a solution of permanganate of potash 1 to 10,000, which is to be followed by washing with plain sterile water until the water returns clear. Lyon[2] follows the antiseptic solution with an astringent, using a solution of chloride of zinc and then washing to sparkling clearness with plain sterile water.

The above may be done with the patient sitting but, as soon as completed, he should lie down on the right side, and from 15 to 20 cm. of the tube slowly passed, giving the patient about one inch at a time. The tip will pass thru the pylorus in from 15 to 20 minutes. A small amount of water left in the stomach and, if stenosis is suspected a hypodermic of atropine, will help the passage of the tube into the duodenum. You can generally tell if the tube is in the duodenum by a gentle pull to see if it is tight or, better still, by aspirating some of the contents and examining it. The duodenal contents are alkaline and frequently contain bile. Sometimes pure bile can be aspirated. The duodenum is then washed out just as the stomach. I use a glass syringe holding between 30 and 40 cc., injecting a syringe-full and withdrawing it at once, and in that way most of it is recovered. This is repeated as often as necessary.

The next step is to relax the sphincter of Oddi and stimulate the flow of bile by injecting into the duodenum 50 cc. of a 33 per cent solution of magnesium sulphate. Then attach the duodenal tube to the vacuum bottle by means of a larger tube, using a glass canula which acts as a window, and begin to recover the magnesium sulphate solution. This solution will become bile stained in a few minutes and be followed by almost pure bile.

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* Read before the Twenty-Seventh Annual Meeting of Utah State Medical Association, Salt Lake City, Utah, Sept. 13-15, 1921.

Now change bottles and the first bile obtained is from the common duct and called "A" bile. As soon as there is a change in color to a darker yellow, or greenish with increased viscosity, begin with another bottle and mark this "B" bile, from the gall-bladder. When this changes to a lighter golden yellow and less viscid than either of the other two, connect with the third bottle and mark this "C" bile, from the hepatic duct[3].

From left to right: Vacuum bottle with duodenal tube and rubber bulb attached, graduate, burette, glass syringe, two vacuum bottles.

It has been demonstrated that the above is the general rule. Exceptions, according to the pathologic condition present, will of course, be noted, and a small quantity of bile from the hepatic duct will be mixed with the other two.

After a study of a large number of cases Lyon[4] states that the "character of the bile recovered by means of the duodenal tube underwent certain definite changes in color and viscosity, first a light lemon to a golden yellow, then a deep, richer, more syrupy golden yellow, finally a very uniform light lemon yellow, thinner and less syrupy than either of the first two"; *and that this sequence occurred in all normal cases.*

In diseased conditions the bile is changed according to the pathology present. If the common duct is infected, the first or "A" bile will be darker in color, thicker in consistency and contain the infected organisms in a much greater number than in health. Also pus and epithelial cells may be found. If the infection extends into the gall-bladder, the second or "B" bile will be darker in color, at times almost black, of greater viscosity and contain a much greater number of bacteria. If there is a cholangitis, involving the hepatic duct, the third or "C" bile will be abnormal.

Failure to obtain "A" bile would mean faulty technic, in that the tube has not entered the duodenum or has gone too far, or obstruction of the common duct. If you obtain "A" bile but no "B" bile, and then obtain "C" bile, you can be confident that there is obstruction of the cystic duct.

In a study of the bile the amount, color, viscosity, turbidity, and whether or not there is pus and epithelial cells present, must be taken into consideration as well as the bacteriologic findings. Levin[5] states that any bile that is turbid, greenish or thick indicates disease.

Smithies[6] says that gall-bladders, at the time of operations, have been pronounced healthy because there was no deformity and they readily emptied on compression, when cholecystitis existed, and a careful examination of the bile would have shown it to be abnormal.

Reyfuss[7] places the etiology of gall-stones under three heads: (1) bile stasis, (2) infection of bile, (3) alteration in bile. Deaver[8] stated that "cholecystitis is practically always bacterial and of all predisposing causes stagnation of the bile is the most important."

The source of infection may be thru the systemic circulation, the hepatic veins, or ascend thru the common duct. It is now thought by some that swallowing pus from pyorrhea or tonsilitis may infect the duodenum and then ascend thru the common duct. The infection may be mild but there is always the possibility of a vicious circle being established, the infection increasing stagnation and the bile stasis increasing the infection, eventually resulting into cholecystitis with chronic thickening of the walls of the gall-bladder or cholelithiasis requiring an operation.

It is the failure of the internist in the past that has caused all cases of biliary infection to be considered surgical. I believe that a large number of these cases can be cleared up without operation and with results equally as good if not better, provided they are taken in time and treated properly.

In all cases of biliary stasis gall-bladder drainage is indicated as a therapeutic measure, carrying out the surgical principle of drainage without the surgical risk. If bile stasis is the most predisposing cause of calculi, early drainage should prevent the formation of stones in some of these cases. In all cases of obscure stomach trouble, biliousness with severe headaches and vomiting, arthritis in which other points of infection cannot be found, the biliary tract should be investigated by means of gall-bladder drainage. I have used it with apparent benefit in all of the above conditions and it has given good results in my hands in one case of chronic intestinal stasis by bringing about a healthy action of the gall-bladder and thereby helping to restore normal peristalsis.

The examinations or treatments should be made in a hospital or the patient's home, unless your office is equipped for that purpose. Toilet facilities should be convenient, as it is not unusual for a bowel movement during the drainage. Following the drainage the duodenum is lavaged with 200 to 250 cc. of some antiseptic solution. Ringer's solution is as good as any.

SUMMARY

As a means of diagnosis it is of much value when used in conjunction with the clinical history and physical findings but should not be depended upon alone.

As a therapeutic method it is of valuable service in all conditions associated with biliary stasis, in the early stages of cholangitis and cholecystitis. In cholelithiasis and chronic cholecystitis with thickening of the walls of the gall-bladder it is obviously of little use.

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SOME PREVENTABLE CAUSES OF ADHESIONS*

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Adhesions following abdominal operations cause trouble with sufficient frequency to merit our attention to anything which may tend to prevent them. This statement is made with the full realization of the fact that adhesions for many years have been the alibi of the surgeon who has not been successful in relieving his patient, and have borne the same relation to the surgeon that malaria and rheumatism have to the physician.

Adhesions, however, sometimes cause serious trouble, and again they not infrequently cause considerable discomfort without danger of serious consequences. Placing ourselves in the position of the patient will remind us very forcibly that we should be diligent in the prevention of their occurrence.

It is not my intention to bring before you the many causes which may be present, and I realize that many of these causes are beyond the control of the surgeon, but it is my purpose to bring to your minds, with three illustrative instances from my own practice, some very simple causes which may with proper care be avoided.

Several years ago I was called in consultation to see a patient in apparently a rather serious condition, with evidence of a more or less general peritonitis and a discharge from the wound which evidently came from the upper intestine. This was a few days following an emergency operation, in which closure of the wound was made in great haste on account of the condition of the patient. It was evident that a portion of the small intestine was caught and fastened to the wound with sutures. The symptoms soon improved, the fistula closed and the patient recovered.

Only a short time later I was called on to operate upon a man who had some months previously been operated upon by a good surgeon and a gastroenterostomy was performed. Upon opening the abdomen we found that the peritoneum had retracted for some distance on either side of the wound, and the stomach was over a considerable area adherent to this surface between the edges of the peritoneum. Evidently in this case approximation of the peritoneal wound was not secured at the time of operation. The thing that happened with these two patients is a thing that occurs in a minor degree too frequently. The omentum is particularly likely to slip under an abdominal stitch, and by fastening to the line of incision this necessarily makes an adhesion and very likely causes some of the discomfort following operation.

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* Read before the annual meeting of North Pacific Surgical Association, Vancouver, B.C., Dec. 10, 1921.

While one should not loiter during a surgical operation, the surgeon should always take sufficient time to make a careful closure and to use as much care in his own work in reference to catching any portion of the abdominal contents with sutures as he expects the nurse to use in the counting of sponges. Reference to these two incidents before a body of this kind is probably as foolish as carrying coals to Newcastle. However, we can probably not too often stress the importance of the utmost care in our surgical work.

It was a patient that recently came under my care that brought to me the suggestion of my subject today. This patient is a single woman, near 50 years old, from whom an ovarian cyst was removed. There were no adhesions and the operation was performed without any apparent unnecessary traumatism of the viscera. The appendix was removed. The operation was performed by one of our best surgeons. I witnessed it myself and everything seemed to proceed with the utmost smoothness, and there was nothing that occurred that could be criticized by a spectator.

Following the operation there was no vomiting the first day, altho the patient did complain of pain and nausea. After that there was a green emesis occasionally and much distension of the abdomen with pain. The patient was placed under my care twelve days after the operation. The abdomen was badly distended, and stomach washing brought out a great quantity of dark fluid with fecal odor. This gave temporary relief which would last for several hours, but finally the same thing would be repeated.

An x-ray picture was taken three days later, or fifteen days after operation, and showed definite obstruction of the small intestine about six inches from the pylorus, with marked dilatation of the first six inches of the duodenum. A barium enema showed no evidence of obstruction in the large intestine.

Another operation was performed sixteen days after the first. Upon opening the abdominal wound a hematoma was found in the abdominal wall. About three-fourths of the small intestine in the upper portion was greatly distended. At one place it looked as tho it was tied up in a knot, and the lumen was almost completely shut off.

Later, to determine the cause of these very extensive adhesions, I asked my friend if he used any kind of antiseptic solution in the abdominal cavity, and he assured me that none were employed. The condition was such that I could only explain it in one of two ways. The first thought that I had in reference to it was that the patient had a peculiar susceptibility or some abnormality, so that a slight traumatism had caused the adhesions; or, second, that there was some local irritation, such as an irritating solution employed during the operation. Finally the thought came to my mind that possibly the water used in sponging was too hot for the patient, and upon questioning the surgeon in charge at the time, he considered that such might have been the case, and the more I have thought of it the more I am convinced that this is what happened. Upon inquiring of the nurse in charge of the operating room, she said that no thermometers were used in determining the heat of the water used for sponging, and that most of the surgeons operating in that hospital insisted upon it being very hot. This would explain the condition as it was found, particularly being located away from the seat of the operation, as it was probably caused by a large hot wet-pack which was used to keep the intestines out of the way.

This was really the worst mass of adhesions of small intestines that I have seen with the exception of cases of tuberculosis or malignancy. The greatest trouble was not near the seat of operation in the pelvis or in the region of the appendix, but in the abdomen and toward the left. The bowel was freed and vaseline was placed among the intestines which had been separated. Convalescence was normal.

I am glad to say that since that time our hospitals in Seattle are taking cognizance of the importance of this matter, and are trying to arrange a uniform system for use of thermometers and having three definite temperatures of water—cold, warm and hot, so that the surgeon may know exactly what he is using and what temperature it is, and the hot water is limited to that degree which can be borne by the patient. While the literature has stated that water as hot as 135 or 140 degrees can be borne by the tissues, it is undoubtedly true that this would be very irritating to the tissues of every patient, and of very serious consequences to a great many who are more susceptible than others.

When an engineer builds a bridge he allows a very large margin of safety. It seems to me that in our work this margin of safety should be borne in mind, and in the use of hot water the temperature should never be above that which would be non-irritating to any patient. While today we are discussing the injurious effects of hot water in causing abdominal adhesions, the same caution should be observed in the use of hot water in all our surgical work.

REPORT ON MEDICAL LEGISLATION IN IDAHO

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The legislative session of the Idaho State Legislature for 1921 proved to contain all the elements of surprise, chagrin, anticipation and victory. From the medical point of view the session opened very quietly. Nothing of importance occurred until suddenly, unannounced, Senate bill 158 was quietly introduced. One reading was sufficient to convince any reasonable individual that it contained a very pernicious and harmful principle.

One of the northern senators introduced the measure, and it has been exceedingly hard to obtain a history which would show its source and the motive behind its introduction. The osteopaths are given credit for its creation, but I have no proof of this statement beyond that they most heartily indorsed it and used their best efforts to have it favorably acted upon. The bill was handled so quietly that it almost escaped the medical men, one of the hospitals in Boise first bringing it to the attention of the legislative committee. Fortunately, the senators were very prompt to see, when the matter was called to their attention that, if this 158 became a law, it would absolutely shatter all the good which had been accomplished in the standardization of hospitals in Idaho. It would have compelled all the better hospitals to open their doors to all practitioners of the healing art. The institutions could not have excluded the unqualified or the criminally inclined practitioners. Constructive criticism or an investigation by a hospital staff which failed to laud or praise would have placed the staff in jeopardy and subject to the possibility of a fine not exceeding $1000. The Senate promptly killed Senate bill 158.

Senate bill 129, the osteopathic measure, proved a sensation. Briefly, it would have given the osteopaths unlimted rights in surgery and medicine. Here, again, the painstaking thoughtfulness of those sponsoring the bill is quite evident. The bill was introduced by the public health committee and immediately received the action that "it do pass." It was impossible to obtain a copy of the bill. The manipulators were so shrewd and skillful that the bill was out on the floor of the Senate, but not a single copy of it could be located. The effort was made in the Senate to have the bill acted upon without the senators having their copies, it being explained that the bill had been ordered printed, but the printers for some unknown reason had not gotten it out. It was very interesting and highly amusing to see the promptness with which the printer completed his job, when one of the senators who was thoroly interested in public health matters demanded the bill. He had succeeded in obtaining a copy of the bill twenty-four hours before it was presumed to have been printed, the sergeant-at-arms being able to funrish the bill when a sufficiently forceful demand was made for it.

Only those desiring that the bill "do pass" knew that it was in the committee and were given the privilege of speaking for it. The medical men were entirely excluded by the wonderfully skillful manipulators who handled this legislation. It passed the Senate 29 to 10. Upon entering the House, it was referred to the committee on medicine, surgery, and pharmacy. A member of the legislative committee, endeavoring to learn just what disposition of the bill had been made in the House, encountered the chairman of the committee on medicine, surgery, and pharmacy, and requested that the medical men be given an opportunity to appear before his committee to oppose the bill. The chairman gave the startling information that the committee was in session at that moment, discussing the measure. When asked if the medical men would be given a hearing, he replied "yes, if they get here immediately." Several hasty phone calls had three medical men before the committee promptly. The medical men naturally were interested, when they appeared before the committee, to find that the proponents of the bill were amply represented, and had had a very successful session with the committee. Drs. L. P. McCalla, James L. Stewart and Ernest E. Laubaugh offered the objections of the medical profession to the committee. After the medical men's objections were heard, the osteopaths informed the committee that they were unable to reply to the physicians' objections and requested another meeting of the committee be had for them to reply. This was promptly granted. At the second meeting both osteopaths and M. D.'s were well represented. Medical men from practically every part of the state came to Boise and appeared before the committee. Every medical society in the state was represented except one.

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* Read before the Twenty-ninth Annual Meeting of Idaho State Medical Association, Twin Falls, Ida., Oct. 6-7, 1921.

A detailed discussion of the claims of the osteopaths and evidence produced by the M. D.s would be quite lengthy, but a brief outline might prove of interest.

1. The osteopaths claimed that the things they asked for in Senate bill 129 had already been granted in twenty states in the union.

2. They claimed that their course of study was the equal in every respect to the M. D.'s course and exceeded the M. D.'s hours of instruction by a goodly number.

3. Much was attempted by at first a subtle, and later a direct attack on the great "American Medical Association Trust."

The physicians made every effort to carry their discussion of the bill on a very high plane, and no acrimonious suggestions were offered. A plain statement of what the medical profession had been working for during the past generation was given the committee and then the statements made by the osteopaths were taken up one by one and analyzed, and the truth given the committee. The truths were obtained from the Council on Medical Education of the American Medical Association, the Council on Education and Public Instruction, the American College of Surgery, the Carnegie Foundation and the Federation of State Licensing Boards. Telegrams from these organizations were placed in evidence for the committee's consideration. Suffice it to say the entire foundation upon which the osteopaths builded crumbled, when the statements of the above named organizations refuted them.

A very amusing situation arose during the hearing. During the first session of the committee the osteopathic followers made mention of the fact that the medical men had obtained information apparently from all sources available on the osteopaths' qualifications, but they had failed to consult the fountain head of information, the American Osteopathic Association. So much had been made of this oversight on the part of the physicians that one of the members of the legislative committtee sat down at his phone in Boise and asked the following question, after telling fully who he was and for what purpose he wished the information. "Will you kindly give me the address of the American Osteopathic Association? I desire to get first hand information on the standard curriculum of the A.O.A. and definite knowledge of the osteopathic schools." Each osteopath very kindly offered to furnish the information desired but, when told that only direct information could prove of value, replied that he did not know the address of the A.O.A. During the second hearing the medical men called attention to the part of the bill which refers to the A.O.A. and the A.O.A. curriculum and announced that they had been unable to obtain the address of the A.O.A. Five of the osteopaths who had answered their phones and to whom the inquiry was made were present at the meeting and they were mentioned by name with the statement that they did not know where the A.O.A. was located. Not one of the five replied, but the spokesman for the osteopaths, an osteopathic physician of Emmett, tried to explain that it was rather hard to give the address, as the president lived in Portland and the secretary in New Jersey.

The committee on medicine, surgery, and

pharmacy very promtply recommended to the House of Representatives that the bill "do not pass." So much light had been thrown on this bill by the medical profession that considerable comment on the measure developed in both houses and it was then learned that by half truths and whole falsehoods the osteopaths had persuaded the Senate that the bill would simply permit them to do minor surgery, "the opening of boils and pimples." Even the Governor was under this impression, as shown by a conversation with one of the legislative committee. He thoroly believed the measure was intended only to give the osteopaths the right to practice minor surgery. Naturally the resentment of the legislators was quite keen, when they took the time to read the measure. Sentiment developed to amend the bill, and give the osteopaths just what they had pretended it contained. The osteopaths, realizing that they had been caught in the dust of their own whirlwind, on the first opportunity in the House moved that the measure be indefinitely postponed. The motion carried with an overwhelming majority.

Several additional measures received the approval of both branches of the legislature and the Governor. Senate Bills 226-227 deal entirely with the venereal disease problem, and are in reality the U.S. Public Health Service's bills. House bill 154 proved a very important measure, not only to the physicians and pharmacists of the state, but to several large industries who find it absolutely necessary to use grain alcohol. Under the old law it was absolutely impossible to obtain grain alcohol, unless it contained certain formulæ prescribed by the federal government. The passage of House Bill 154 now makes it possible for hospitals, physicians and industries to purchase grain alcohol for scientific and manufacturing purposes.

One very important measure was lost in the Senate. It would have safeguarded all those being entitled to use the various degrees designating which schools of healing art they followed. It prevented under severe penalty all those not having the proper licences to use the term doctor, or the abbreviation "Dr." This measure would have been of untold value to the Bureau of License, Department of Law Enforcement, as it would have given them a lever to bring pressure on many individuals preying upon the public as doctors. Unfortunately, and for some unexplainable reason, a sufficient number of the Senators to defeat the measure failed to see its value.

WHAT IS THE MATTER WITH THE PRACTICE OF MEDICINE*

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To anyone who has practiced medicine for ten or fifteen years it must be apparent that conditions are not now what they were at the beginning of that period. A great change has come over public consciousness as regards the healing art. The old family doctor of a former generation is passing and in his place has come the osteopath, neuropath, mechanotherapist, chiropractor, christian scientist, new thought and what not. The medical man who held the field against all comers for a century has had to step aside and make room for others. He has been so thoroly engrossed in his own active profession that he has little appreciated the slow, insidious influx of other cults. Uniformly busy, he has felt secure. Seldom has he stopped long enough to note the drift of public sentiment, let alone to analyze its meaning or cast about for a cure. Once the court of first and last appeal, his grip on the febrile public pulse has weakened. His opinion with many is now discounted, fallen below par. This feeling is not local.

The mere fact that in nearly every legislature of the Union we find opinion nearly equally divided for and against the regular practitioner should be sufficient proof of my position. Now legislators are not necessarily either fools or crooks. They represent in a fair way their constituents. Most of these men mean to do the right thing and, if they go wrong, it is because they are illadvised or misinformed, colored, perhaps, with a certain amount of personal bias. Space will not permit of a detailed analysis of all the forces that have been at work to produce this change of front. I hope, however, that I may be able to point out some of the most obvious reasons, with a view of suggesting remedies for a cure.

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* Read before King County Medical Society, Seattle, Wash.

First. Among the highly trained and specialized professions we rank first. I may add with equal propriety that we also deserve first place as economic and industrial fools. Among no other class of men does the questionable promoter do a more thriving business. We meet at our county and state societies to discuss minutiae in medicine, but wholly ignore broad constructive business policies. Collectively we have no plan; we aim at nothing and consequently get nowhere. The medical laws on our statute books—the very laws pertaining to our business—have for the most part been written by lawyers, bankers and farmers. At the last session of the legislature of our state the Committee on Medicine in the House had as its chairman a blind osteopath. Why? Simply because no regular practitioner was there to serve and conserve the business. The banker, the broker, the lawyer, the merchant, yes, even the dairyman and farmer learned long ago that, if he would secure legislation for the proper protection and promotion of his business, he must at least be present and "sit in" in the framing and passing of such laws.

Constitutions and codes are man made; perfect so far as man is perfect; vicious so far as man is ignorant or bad. Any business that is not worth proper representation must abide the consequences. Default of adequate legislative voice can be construed only as satisfaction with existing and impending order of things. Silence gives consent. If, then, we are dissatisfied and would rewrite the various medical practice acts on our statute books, it devolves upon us alone to assume the initiative. Surely we cannot blame the banker, lawyer or farmer if our medical laws are not to our liking. We must send to both upper and lower houses sufficient men who have both interest and insight in our science. To fail in this gives us, then, no just cause for complaint. There is nothing new in this bald statement of facts. It is nothing more than a restatement of the old adage, "God helps those who help themselves."

We have in this state a league for the conservation of public health. This organization can be of manifest benefit in carrying forward our policies. It is, however, absolutely imperative that we make *our* desires known to the league in all questions of medical procedure, rather than to expect the league to form a constructive policy for us. We cannot dodge the issue. We cannot afford to "pass the buck." Every legislative year we should take invoice. We should pick out certain objectives, draft our bills accordingly before the legislature meets, get behind the program with a solid front and put it over. Remember, we are face to face with a condition, not a theory. It takes votes to pass bills—twenty three in the Senate, and forty-nine in the House. The league can aid in selecting proper men to represent us in the legislature and also help in furnishing adequate ordnance and ammunition, but we must have more medical men in both houses to help hold the trenches.

Second. Something must be done to raise the standard of our own profession. I realize that it is a difficult task to standardize a business where efficiency ranges from ninety-five per cent to zero. The old doctor of a generation ago fell down. Educated in good schools that were in their day "Class A" institutions, he has in general drifted out to small communities. He has been uniformly busy and self satisfied. He has lost that inspiration for progress that comes only thru personal contact with others working in the same line. What is the result? He stops growing; he hibernates; he finds himself after a score of years of active practice far behind the times. These men are not limited to the small villages. We find them in the large cities as well. There are, of course, exceptions to the rule, but the exceptions only serve to exemplify the rule. If half of the profession is below standard, it is imperative that we hit upon a method to raise the standing of that fifty per cent up to a proper working level. To standardize hospital work is a good thing. What about the general practitioner in the wilderness who has not access to a hospital of any type? Or the doctor of the city who fails to avail himself of those within his reach? Something must be done to reach this class of men. Manifestly, before we are in a position to find fault with other cults, we must put our own house in order.

I would suggest as a remedy that our license to practice medicine be of a temporary character. To maintain that certificate in force should call for a certain definite amount of graduate work to be done within a stated period of time. To fail to comply with this requirement should automatically forfeit the right to practice. Renewal of certificate should come only thru proper compliance with the law or re-examination. This precedent has been established in the certification of teachers in our public schools. I know of no better method by which men can be made to keep abreast of the times than by such a procedure.

Third. I come now to the question of prevention and quarantine of contagious diseases. At the last session of our state legislature the question was raised in the Senate in connection with the adoption of an amendment to the proposed school code. The first ballot stood twenty to twenty concerning the right of a health officer or school physician to make an examination in case of suspected contagious disease. The outcome of this preliminary bout resulted in the introduction of Senate Bill No. 180. After many battles we succeeded in extracting most of the poisoned fangs. The bill, however, passed in its present form and, as you all know, has been held up for referendum.

I am not prepared to say the bill is wholly bad; I cannot say it is entirely satisfactory. It was brought on the floor of the Senate without opportunity for previous consideration by the Committee on Medicine. It came from the Committee on Education and we had, therefore, no chance to look it over. We fought a running battle and took what toll we could. Then and there I served due notice that in the future all matters concerning public health must come before our Committee and be properly considered or we would know the reason.

Much resentment was raised against compulsory vaccination and clinic treatment. I believe the ground was well taken. No question is settled until it is settled right. However we may feel in this matter, this is a free country and every man has a right to such treatment as he sees fit, unless in so doing he jeopardizes the health of society at large. We have a right, and should demand, that all cases of contagion be properly quarantined. A health officer should have unquestioned right to examine anyone, any time, any where, whom he has reason to suspect infected with contagious disease and, if found infected, place him where he will no longer be a menace to the public.

I belive in school inspection. I see no reason why the state should spend thousands of dollars on the education of pupils who are in no fit physical condition to absorb or properly assimilate what is given. Manifestly, a child who cannot see or hear has no place in a public school without being properly conditioned. Likewise, one whose nasopharynx is obstructed with adenoids and tonsils cannot be expected to do good work. Such pupils occupy floor space and serve as a brake on the progress of others. The correction of such impediments to education, however, is largely a matter of education.

We, as a profession, have not done our full duty to society. We lack team work. We hear all sorts of fool notions promulgated but seldom take time to correct such errors. We owe to the coming generation correct notions of health and disease. Here, again, we pass the buck. We intrust such vital instruction to half baked, misinformed, unsophisticated school "mams." Is it any wonder, I say, that our boys and girls come out of our public schools with erroneous ideas on medicine, and yet, remember, these are the fathers and mothers of the coming generation. I believe, therefore, it is the duty of our profession to carefully scrutinize all health instruction in our public schools. We should see to it that men are employed who have sufficient training of the right kind to give proper instruction.

SUMMARY

1. We need more medical men in both houses of the legislature to secure proper medical legislation.

2. We should do something to encourage graduate work, thereby lifting the standard of the profession.

3. In all questions of contagious disease the department of health should have a free hand in isolation and quarantine.

4. We should encourage school clinics, advisory in character, for the correction of physical impediments to education.

5. We should always maintain the right of free choice of doctor and treatment, where it does not jeopardize the health of society.

6. We need closer supervision of all health instruction disseminated in our schools.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington, Idaho and Utah
Devoted to the Interests of the Medical Profession of the Pacific Northwest
Editorial Office, 323 Cobb Building, Seattle, Wash.
MARCH, 1922

EDITORIAL

PUBLICITY FOR PUBLIC HEALTH PROBLEMS

During recent times the public has been eager to acquire information concerning conditions of diseases and their treatment. This is witnessed by the crowds that follow any sort of advertised speaker on these matters. The psychologist, real or imaginary, who widely advertises his series of lectures on the means of acquiring health, happiness and prosperity, is sure of an audience for a week or ten days. The "miracle man," with a grotesque smattering of anatomy and physiology, will in a short time attract to himself an enthusiastic band of followers who are ready to try out any absurd method of treatment for his supposed ailments. Whenever the peripatetic christian scientists lecturer comes to town, loaded with a stock of Bostonese patter, he will fill the largest available auditorium with a devoted crowd of men and women who drink in his stereotyped phrases on religion and human ailments, listening with rapt attention to time worn and meaningless expressions, so aptly described by Mark Twain as a diarrhea of words and constipation of ideas, a full text of which occupies a page or two of next morning's papers. And now has arrived the chiropractic propagandist who has assembled all the above methods, together with approved forms of commercial publicity, and has persuaded an increasing portion of the public that the absurd ignorance of health and diseases which he puts forth as facts should supplant scientific medical knowledge, accumulated thru centuries of investigation. But the public is just as willing to hear the established truths concerning disease and health of the human body, when presented in an attractive manner by qualified publicists. This has been shown in campaigns of the tuberculosis workers in the past, and more recently in the educational campaign concerning cancer, carried on thruout the country.

The belief is held by some that these propagandas of ignorance are fostered by the daily papers to the exclusion of real knowledge concerning health problems. This, however, is a delusion. The daily press has consistently shown its willingness to present proven facts as to the treatment of human ailments, when presented for that purpose. A recent illustration of this is shown in the experience of the Spokane physicians who have carried on a campaign of information in the daily press which has provided regular discussions on matters of health and disease. Nearly every daily paper in recent times has featured a health column, the articles being prepared by an authority, more or less known, from some distant city. Is it not reasonable to suppose that articles of this nature, presented under the signatures of well known physicians of their own city will be read by the public with much more interest and attention than similar articles prepared by a stranger?

If such a campaign of information is to be undertaken, its permanence must be assured by something more substantial than an occasional article written in a haphazard manner. In our Northwest states we have at hand an organization well fitted to carry on a continuous work of this nature. The Public Health League of Washington, The League for the Conservation of Public Health in Oregon and Idaho are established and equipped for fathering such a continuous campaign. Let them undertake the supervision of a series of articles in the daily press, dealing with problems of health matters and there will be a legitimate method established for counteracting some of the mendacity and ignorance displayed by the quacks and pseudo-medical propagandists, which flourish to such a marked extent in all our cities.

THE MEDICAL COURT MARTIAL OF DR. N. E. WAYSON

A lamentable and inexcusable episode that has created considerable interest in Northwest medical circles was the so-called "medical court martial" of Dr. N. E. Wayson, Past Assistant Surgeon, U. S. P. H. S. in command of the station at Portland, Ore. Dr. Wayson was charged with a considerable number of offenses, including such trifling and unimportant ones as speaking discourteously to his stenographer, telling her to hurry and get some papers for him and repeating this in an irritable manner two or three times. From this the complaints ranged all the way up to calling an ex-soldier applicant for compensation "a nut who should be in the insane asylum." The ex-soldier later on committed suicide and it was alleged that he did so because of this unsympathetic statement by Dr. Wayson. An investigation was demanded and, tho to all appearances the Surgeon General of the U. S. P. H. S. realized the futility and senselessness of such a proceeding, he was eventually forced into causing a court martial to be held. Indeed, it would appear that the charges would never have been brought had it not been for the intervention of politics. The United States Senators from Oregon were importuned to demand investigation with the results that one was finally held.

When the case was brought to trial, the complainants presented little evidence to substantiate their charges against Dr. Wayson. Various witnesses were examined. They consisted in the main of disgruntled psychoneuropathic individuals of the type who could never be pleased or satisfied by anyone. Certain of the witnesses exhibited such strong prejudices as to invalidate their testimony completely and no one who followed the trial closely could come to any other conclusion than that it was a silly and senseless waste of the taxpayers' money, with little or nothing in the way of resulting good either to the U. S. P. H. S. or to the Veterans' Bureau.

Those who are in position to know best are assured that the ex-soldier, who was hurt or injured or who had a just claim, at all times received careful and decent consideration from Dr. Wayson. It is equally clear that the malcontents, tho loud in voice, were few in number. Like all servants of the U. S. P. H. S. and indeed all other public servants, Dr. Wayson was obliged to deal with all manner of men and, equally like all such servants, at times found himself in a difficult position. It was his duty not only to see that the injured or sick men received just treatment and adequate compensation, but it was also his duty to see that the malingerer and all who were not entitled to compensation failed to receive it. He was there not only to protect the soldiers but the Government and those who worked with him and for him knew that he did so to the best of his ability. During the progress of the trial newspaper accounts have done Dr. Wayson much injury and injustice and it is hoped that medical men, appreciative of the difficulties of his office, if they cannot see their way clear to recognize what seems to be reasonable certainty that he has been seriously wronged, will at least suspend judgment until the final report of the court martial is handed out at Washington.

INTERESTING IF TRUE

Since the establishment of workingmen's compensation in the State of Washington, several situations have arisen relating to the medical profession which have been the subject of considerable comment and discussion. The latest incident of this kind has a very important bearing on the practice of medicine in this state. The Supervisor of Industrial Insurance announces that under the provisions of the Industrial Insurance Act any physician is required to treat any injured workman applying to him for treatment who is protected by this act, and a refusal on the part of the physician to comply with the request will subject him to prosecution. If this requirement is made valid by legal decision, it will introduce into the practice of medicine a situation which has never yet existed in the past history of the healing art. From time immemorial the physician has enjoyed the privilege of treating an individual patient or not, according to his own wishes and desire. According to this interpretation, he is no longer a free agent in the practice of his profession, but is subject to the orders of others. If this revolutionary principle has been introduced into the practice of medicine of the State of Washington without the knowledge of the medical profession, it is high time that such a condition received wide publicity. We do not believe that such interpretation of the law can be established in the courts. It would be class legislation of the most aggravated form. At the present time no class of citizens are obliged to render services to any one against their own will or desire. This is a situation which ought to interest every member of the medical profession. A final decision in the matter will be awaited with interest.

NOTABLE HEART LECTURES

A series of lectures will be delivered in Portland, May 15-19, known as the Jones Lectures, by Sir Thomas Lewis, the famous heart specialist of London. They will be five in number. The first two lectures will deal with The Nature of Auricular Fibrillation and the third and fourth will discuss Quinidin, while the fifth will deal with Digitalis.

In discussing the subject of the lectures Sir Thomas Lewis writes: "This subject is chosen because it comprises the freshest work which I can bring you. It is a subject of some intricacy, one which cannot be fully understood without a great deal of quiet meditation, meditation for which there is little time while the lectures are actually being delivered. I suggest that active students, especially those who are particularly interested in the problems of the kind, will find it advantageous to read a few of the published papers relating to the problems with which I shall deal." The medical profession of the Northwest is invited to take advantage of this exceptional opportunity of hearing the latest information available on this important phase of disease of the heart.

ARRANGEMENTS FOR THE JULY SPOKANE MEETING

The committee appointed to secure railroad rates for the Pacific Northwest Medical Association meeting reports that a rate of fare and a half has been granted for the territory west of the Rocky Mountains. The committee reports, also, that they expect the same rate will be granted for Montana and Utah, but they have not yet received a definite promise. Arrangements have been made for a Willamette Valley special train to Spokane. It will be put on a convenient side track, so that the sleepers may be occupied during the stay in Spokane. A parlor car and dining cars will also be parked with the sleepers, and a telephone service will probably be installed in the parlor car during the stay in Spokane.

Forty-two reservations were made at the Hotel Devenport within ten days after the first notices were sent out. Reservations are coming in at the rate of two or three a day, so that physicians who wish to receive accommodations at the Hotel Davenport, which is the Association headquarters, should make their reservations at once.

A METABOLIC JOURNAL

The first number has appeared of *The Journal of Metabolic Research,* edited by Dr. Frederick M. Allen, and published by The Physiatric Institute of Morristown, N. J. The editor states: "Though metabolism is essentially a division of physiology or chemistry, dealing with nutritive, internal secretory and related functions, its intelligent study demands additional information gathered from morphology, general biology, pathology and several departments of medicine." This journal is intended to serve for publication of the results of original research. Reviews or other non-experimental articles will ordinarily no be published. This number, of one hundred sixty-three pages, contains seven papers, five being reports of experimental work by the editor, all dealing with diabetes—its pathology and experiments on carbohydrate metabolism and diabetes. They constitute a valuable contribution to experimental studies in this disease. It is well printed, on good paper, with heavy glazed paper for numerous pages of excellent microphotographs. It contains no advertisements, is a monthly and price $10 per year. It presents some new features in medical journalism and its future will be observed with interest.

MEDICAL NOTES

OREGON

Meeting of Medical Examining Board. On February 12 thirteen out of twenty applicants received licenses to practice medicine in Oregon. The successful applicants are as follows: B. M. Tanaka, Portland; O. S. Phillips, Boise, Ida.; J. L. Montgomery, Minneapolis, Minn.; A. B. Dykeman, Portland; F. B. Patterson, Portland; A. H. Johnson, Arlington, Ore.; J. P. Murphy, Portland; W. H. McDougall, Portland; W. J. Corcoran, Chicago, Ill.; F. W. Lester, Portland; C. F. Lester, Salem, Ore.; J. F. Drew, Portland.

Medical Unit Organized. The 324th Medical Regiment has been reorganized with Col. J. Guy Strohm, of Portland, as chief surgeon and commanding officer. This unit will comprise sixty-eight officers and eight hundred sixty enlisted men. Col. Strohm will supervise its organization.

Coroner's Contract Renewed. The contract between Willamette County and the University of Oregon Medical School has been renewed for the current year. According to this the medical school supplies two coroners' physicians.

Returned from Europe. Dr. Ray W. Matson of Portland, has returned from Europe after more than a year abroad. During this time he has done special work in Vienna and France.

Home From Work Abroad. Dr. Esther Pohl Lovejoy, formerly City Health Officer of Portland, has recently been in that city. During the past year she has done medical work in hospitals in Turkey, Armenia and Russia. Recently she has been connected with the American Women's Hospital Association of New York.

Appointed to Examining Board. Dr. J. K. Lock, of Portland, has been reappointed by the Governor as a member of the state board of medical examiners.

WASHINGTON

Vaccination Order to be Tested in Court. The question of enforcing the vaccine order of the State Board of Health was brought to an issue last month, when a teacher of a private school in Olympia was arrested for failure to have her pupils vaccinated. The "Public School Protective League" came to the rescue with funds to try the issue in the courts. An appeal from the Thurston County Superior Court was made to the Supreme Court for overruling the State Board of Health regulations. The decision of the Supreme Court has not yet been announced.

New Hospital Under Construction. A new hospital is being built in Puyallup which is financed by a building contractor of that city. It will be a two-story brick building, forty by one hundred eighty feet, to cost $32,000. The first floor will be occupied as a clinic, while the second will contain twenty-five beds. On June 1 it will be leased to a group of physicians of the city.

Finest on Pacific Coast. The General Inspector of the U. S. Veterans' Bureau, who recently visited the U. S. Veterans' Hospital at Walla Walla, says it is the finest hospital of the kind on the Pacific Coast. It is expected the institution will receive patients by May 1, when it will be equipped with one hundred sixty-one beds. This will not fill the capacity of the two buildings now being erected.

Community Hospital. It is proposed to make the hospital at Okanogan a community institution. A stock subscription list has been circulated among the doctors and business men. Since its opening two months ago as a modern and well equipped institution its value to the community has been demonstrated.

Hospital Wing Opened. Last month the basement of the new hospital wing of St. Luke's Hospital at Spokane, was opened. It is expected to utilize the first floor of the building this month.

Sanitarium Organized. A committee of the Commercial Club of Leavenworth has been appointed to incorporate the Cascade Sanitarium. It is proposed to erect a building at a cost of $10,000.

County Society Bulletin. King County Medical Society has entered upon an ambitions publishing enterprise in the enlargement of its monthly bulletin. It is now a twenty-page pamphlet, issued semi-monthly. It contains programs of the four monthly meetings with several pages of news items and an enviable collection of advertisements.

Puget Sound Academy of Ophthalmology and Oto-Laryngology held its annual meeting January 31. The following officers were elected for the ensuing year: Pres., Frederick Adams, Seattle; First Vice-Pres., H. W. Bell, Tacoma; Second Vice-Pres., W. G. Cameron, Tacoma; Sec'y-Treas., J. H. Harter, Seattle.

Awarded British Medal. Dr. Adelaide Woodward, who has visited in Seattle for some time, has received the Keiser Hind medal from the government of India. She has for some years been a missionary in that country. During the war she held a catain's commission. She established a hospital during that period at Sategar for the benefit of the native people. She is said to be the only American who has received the medal.

New Health Officer. The Mayor of Dayton has appointed Dr. J. A. MacLachlan as city health officer to succeed the late Dr. J. M. Miller.

IDAHO

Pocatello County Medical Society held its annual meeting last month, at which the following officers were elected for the ensuing year: Pres., A. F. McClusky, Buhl; First Vice-Pres., J. F. Coughlin, Twin Falls; Second Vice-Pres., C. P. Groom, Rupert; Sec'y., J. M. Davis, Kimberly.

City Physician Resigns. Dr. R. C. Wood of Boise, resigned his office last month. His successor is to be appointed later.

OBITUARIES

Dr. Walter V. Gulick of Seattle, Wash., died February 10, from chronic endocarditis. He was born in New York in 1871. He spent his childhood in California and his boyhood in Japan, where his parents lived for twenty years. He attended the University of Southern California for three years, obtaining his B. A. degree at Oberlin College. Before studying medicine he was a journalist and for a time was secretary for the Associated Charities in Chicago. He obtained his medical degree at Rush Medical College and practiced for three in Minnesota. In 1904 he became intern at St. Mary's Hospital in Rochester. In 1906 he located in Tacoma and after nine years of general practice became assistant physician in 1915 at the State Hospital for the Insane at Steilacoom. He located in Seattle in 1918, where he practiced until his death.

Dr. V. C. Birney of Portland, Ore., died February 7, at Green, Iowa, as a result of a disability sustained during the world war. He belonged to the heavy artillery and in 1918 was gassed while attending the wounded in the field.

Dr. Belle J. MacDonald, formerly of Portland, Ore., died in Sicily, February 11. She was a native of Portland and obtained her medical education in the University of Oregon eMdical School. She later practiced in New York and became a medical writer of some prominence.

Dr. William F. Shayley of Orofino, Ida., died February 12, at the age of 71. He was born in Kentucky and graduated from Keokuk College of Physicians and Surgeons. He practiced until a short time ago, when he was seriously injured in being thrown from his buggy. He was a pioneer of the Camas country.

REPORTS OF SOCIETY MEETINGS

IDAHO STATE MEDICAL ASSOCIATION

MINUTES OF THE TWENTY-NINTH ANNUAL MEETING OF THE IDAHO STATE MEDICAL ASSOCIATION, HELD AT TWIN FALLS, IDAHO, OCTOBER 6-7, 1921.

MORNING SESSION

President H. W. Wilson presiding. The various committee reports were rendered. The Legislative committtee, thru its chairman, L. P. McCalla, gave a detailed report of its activities, recounting the vicissitudes encountered in the last Idaho legislature.

The Secretary then read a report covering the activities of the legislative committee, and giving a brief, comprehensive report of the various bills of interest to the medical profession. This report is appended. The Secretary's annual report, including the financial statement of the Association, was read and approved. Dr. Ed. E. Maxey made some very laudatory remarks relative to the completeness of the Secretary's report.

Dr. Scott, of Twin Falls, made a few remarks relative to Northwest Medicine, stating that, despite the fact that the war and its aftermath had caused such advanced prices in print paper, printing, etc., the official organ of the Association had maintained its excellence and also its financial standing, the Journal showing a most laudable balance to its credit.

President Wilson delivered a splendid address, in which he spoke for the city of Twin Falls, in welcoming the medical profession of Idaho. He portrayed the advances in medicine, thru the period of war and postwar days, particularly stressing the great importance of the medical profession and its duties, in recognizing early the changes brought about by war conditions and by the postwar world-wide situation on the enrvous system and entire metabolism of the human machine. He pointed out a vicious circle was created and that we were now on the second half of the circle, the upset nervous system now tending to create and maintain both new and old problems which are influencing the situation of the world today.

AFTERNOON SESSION

Call to order by the President at 2:00, fifty-eight members being present and in their seats.

Dr. A. C. Jones, of Boise, gave a "Report of Radium Cases of Head and Neck." This paper created a most instructive discussion. Maxey, of Boise, stressed the importance of the conclusion reached by Dr. Jones. L. P. McCalla, of Boise, spoke on the value of radium, its limitations and influence in metastasis. Young, of Caldwell, and Else, of Portland, added timely remarks. Van Cott, of Twin Falls, reported five cases and spoke of radium's influence in eye cases.

Dr. Ed. E. Maxey, of Boise, presented a paper on "Diseases and Conditions That May Cause Blindness." This produced wide discussion. Gonorrheal Ophthalmia and its Prophylaxis in the New-Born occupied the chief part of the discussion.

The Cancer Problem was handled most ably by L. P. McCalla, of Boise. Epplen, of Spokane; Else, of Portland; Howard, of Pocatello; Aspray, of Spokane; Adson, of the Mayo Clinic and McCalla discussed the problem from all possible angles. The paper and discussion were most interesting and highly instructive.

H. W. Wilson, of Twin Falls, presented a well-developed case of Carcinoma of the Penis.

After some difficulty in arranging the lantern, Dr. Joseph Aspray, of Spokane, gave an interesting paper on the "Roentgen Rays as an Aid in Diseases of the Mastoid and Nasal Sinuses." The x-ray plates were remarkable and all those present felt the owed Dr. Aspray a debt of gratitude for the able and instructive way he had handled his subject.

EVENING SESSION, 8:15 P. M.

Major Allen, of the United States Public Health Service, Hospital No. 52, Boise, gave a talk on the activities of the United States Public Health Service, as they related to the reconstruction and rehabilitation of disabled soldiers. The Major's talk was most timely because he particularly stressed those points which have caused confusion to many physicians, when in contact with disabled ex-service men.

The League for the Conservation of Public Health now came up for discussion, Dr. W. S. Williamson, of Portland, being the chief speaker. He pictured those conditions encountered in California, Oregon and Washington, which prompted the organization of the League for the Conservation of Public Health. He spoke at some length on the subject of the League, the machinery created whereby its objects were being realized, the importance of sufficient finances, the active support of every physician and the representative citizens of each and every community in the state. His remarks prompted considerable discussion, which was led by Drs. L. P. McCalla and J. L. Stewart, of Boise. Following the discussion, it was voted that the President name a committee to investigate the feasibility and desirability of creating the League for the Conservation of Public Health of Idaho. It was further voted that, if this committee should come to the conclusion that a League was needed in Idaho, they be empowered to create a temporary organization, said organization to call a meeting at some future date, and establish a permanent organization to be known as the League for the Conservation of Public Health of Idaho.

After conclusion of the business meeting, and on the request of the members of the Association, Dr. Aspray showed a number of x-ray pictures and demonstrated the methods he had used in making the original plates.

FRIDAY, OCT. 7, 9:00 A. M.

The meeting was opened with President Wilson in the chair.

The announcement of the following committees appointed was read:

Nominating Committee:

Max T. Smith, Chairman, Shoshone County Medical Society.
L. P. McCalla, South Idaho District Medical Society.
E. L. White, North Idaho District Medical Society.
Floyd G. Wendle, Bonner County Medical Society.
R. G. Young, Canyon County Medical Society.
C. R. Scott, South Side Medical Society.
W. F. Howard, Pocatello Medical Society.
T. C. Hollister, Idaho Falls Medical Society.
J. R. Gray, Upper Snake River Medical Society
Geo. H. Ashley, Bear Lake Medical Society.

Committee on League for Conservation of Public Health:

Ed. E. Maxey, South Idaho District Medical Society.
H. D. Spencer, Idaho Falls Medical Society.
Geo. F. Ashley, Bear Lake Medical Society.
Floyd G. Wendle, Bonner County Medical Society.
Max T. Smith, Shoshone County Medical Society.
F. B. Evans, Upper Snake River Medical Society.
G. O. A. Kellogg, Canyon County Medical Society.
C. R. Scott, South Side Medical Society.
W. F. Howard, Pocatello Medical Society.
E. L. White, North Idaho District Medical Society.

The President urged the committees to complete their work as early as possible and submit reports.

The business meeting was adjourned and the scientific program continued.

Dr. W. P. Epplen, of Spokane, gave a most scholarly address on "The Pathology of Cirrhosis of the Liver." His discussion of this subject caused many to recall the wondrous steps of the pathology of the liver.

The Future of Chemistry and Its Relation to Medicine created considerable interest and was discussed by E. F. Rodenbaugh, State Chemist, and Mr. Dooley, of Twin Falls. The general discussion prompted a motion to be passed instructing the Secretary to communicate with Idaho's representatives in both branches of Congress, stating that the Idaho Medical Association desired to go on record in favor of those steps which would honorably and legally protect the chemical industries of America.

Dr. J. L. Stewart read a paper on "Hip Joint Disease. He stated his reason for presenting the paper was the hope that it would create full and general discussion. In the discussion most all phases of hip joint disease and its treatment received consideration.

The Nominating Committee presented the foling nominees for the ensuing year:

President, Max T. Smith, Wallace.
Vice-President, John R. Gray, St. Anthony.
Secretary-Treasurer, Ernest E. Laubaugh, Boise
Chairman Legislative Committee, L. P. McCalla, Boise.
Chairman Public Health Committee, E. L. White, Lewiston.
Chairman Educational Committee, W. F. Howard, Pocatello.
Chairman Hospital Standardization, James L. Stewart, Boise.
Journal Trustees: Floyd G. Wendle, Sandpoint; R. G. Young, Caldwell; C. R. Scott, Twin Falls.
Member House of Delegates, John R. Bean, Wallace.
Alternate, H. D. Spencer, Idaho Falls.

Committee on League for the Conservation of Public Health made a report:

(1.) That a League for the Conservation of Public Health should be created.

(2.) The committee recommended that the present committee be retained, with Dr. L. P. McCalla, president; Ed. S. Maxey, vice-president; Ernest E. Laubaugh, secretary-treasurer, said committee to meet on call of the President to organize the League for the Conservation of Public Health of Idaho. Committee further advised that F. Willis Almond, Medical Advisor, Department of Public Health, be added to the committee, and the maximum dues be five dollars ($5.00) per month.

The reports of the committees were accepted by unanimous vote and the Secretary instructed to cast the necessary ballots for election.

AFTERNOON SESSION, 2:00 P. M.

President Wilson in the chair.

Dr. A. W. Adson, of the Mayo Clinic, presented a very excellent paper on "The Treatment of Brachial Plexus Injuries." The illustrations used were quite remarkable for their clearness in demonstrating the etiology of this class of injury and the seeming futility of treatment of those cases having evulsion of the roots. The discussion proved equally interesting, being entered into by Eikenbary, of Spokane; Else, of Portland; McCalla, of Boise, and Epplen, of Spokane.

The second paper was presented by Eikenbary, of Spokane, entitled "Diagnostic Studies of Diseases and Injuries to the Vertebrae." The x-ray pictures demonstrating the various injuries were such that everyone was benefited and had a much clearer insight to the symptomatology and pathology of spinal column diseases and injuries.

Dr. Earl J. Else concluded the program with discussion of "Dysthyroidism." Each point was illustrated by histologic sections.

The scientific meeting was adjourned.

The evening proved the equal of the scientific program, the members and guests being entertained by the South Side Medical Society. They had a banquet at the Hotel Rogerson, eighty-four partaking of the Society's hospitality.

During a breif session of the council the applications of the Upper Snake River Medical Society and the Idaho Falls Medical Society affiliation with the State Association were received and unanimously approved. The Secretary was instructed to provide the necessary charters, etc., for the new organizations.

ERNEST E. LAUBAUGH, Sec'y-Treas.

BOOK REVIEWS

Edited by Kenelm Winslow, M.D.

Abdominal Pain. By Prof. Dr. Norhert Ortner, Chief of Second Medical Clinic, Univ. of Vienna. Translated by William A. Brams, M. D., Lt. Commander, U. S. N.; and Dr. Alfred P. Luger, First Assistant Second Medical Clinic, Univ of Vienna. Cloth, 362 pp., $5.00. Rebman Co., 141 W. 36th St., New York City.

The remarkable clinical acumen displayed and the marshalling of all the finer details that, when properly assembled, go to form a perfect clinical picture, cannot fail to excite one's admiration in the perusal of this work. Ortner, in his vast experience, is a master of the clinical art. The extent and details of his trained observation are amazing. The work is practically a discussion of the finer points in differential diagnosis of abdominal diseases, with pain as the text, but all other signs and symptoms are considered in the consummation of the diagnosis. For instance, in the presence of suspicious abdominal lesions in pleuropulmonary diseases, the hyperesthesia of the skin without tenderness on deep pressure, increased respirations, cough, flush on the cheeks, headaches. In diaphragmatic pleurisy, the tenderness along the course of the phrenic nerve, lagging of one-half of the thorax, decrease of abdominal tension during respiration. The discovery of all these associated signs and symptoms may save one from the disastrous error of diagnosing appendicitis or other acute abdominal lesion, and performing an unnecessary operation, as has too frequently occurred.

The writer considers abdominal pain topographically. For example, beginning with the right hypochrondrium, he discusses acute colicky pains in the region of the gall-bladder in some thirty pages; acute continuous pain for about five pages, and chronic continuous pain in the same region, and then takes up chronic diffuse pain over the whole right hypochondrium. And so on for each of the classic abdominal regions. The book is not only of interest, but will prove of great value as a work of reference in differential abdominal diagnosia, as in it are discussed the most rare and obscure disorders.

WINSLOW.

Diseases of the Skin. By Henry W. Stelwagon, M. D. Ninth Edition revised with the assistance of Henry K. Gaskill, M. D., attending Dermatologist to the Philadelphia General Hospital. 1313 pages, with 401 text illustrations and half-tone plates. Philadelphia and London: W. B. Saunders Company, 1921. Cloth $10.00 net.

While studying this book one feels by comparison that he is consulting one of the highest in authoritative knowledge that can be obtained on the subject of skin diseases. It is rich in references to the world's most important literature, mostly of the past twenty-five years, and will prove indispensable to the searching analytic mind. The subject matter is replete in all its phases and elaborated with important details, colored plates and excellent illustrations, thus clarifying and emphasizing the clinical and diagnostic problems of cutaneous medicine. A few of the rarer diseases are included, observed now and then and not heretofore mentioned in this work, such as acrodermatitis Hiemalis, endothelioma, espundia, keratolysis exfoliativa, amebiasis and folliculitis ulerythematosa reticulata.

The methods of treatment described are the most worthy we possess and here and there a guiding hand shows the selection of the soundest and most practical methods employed by the experienced mind. The work is classified according to the system of Hebra and modifications of Crocker and Morrow, as being the most practical and having the greatest support of teachers of dermatology.

Very generous praise is due Dr. Gaskill for carrying on the monumental work begun by the late Dr. Stelwagon (an autographed portrait of whom adorns the front page), and completed by him after the distinguished teacher and author had gone to his reward.

GABLE.

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THE MALTBIE CHEMICAL CO., NEWARK, N. J.

Laboratory Manual for the Detection of Poisons and Powerful Drugs. By Wilhelm Autenrieth, Prof. in the Univ. of Freiburg. Translated by William H. Warren, Ph. D. Fifth American Edition with 25 illustrations. Cloth, 342 pp, $3.50. P. Blakiston's Son & Co., Philadelphia, 1921.

This is a recognized standard work in toxicology. In this edition there are but few changes from the last American edition and no new German edition has appeared since. As an addition in the present volume, we have the consideration of the toxicology of methyl or wood alcohol, including a number of tests for its qualitative and quantative determination. It is strange that in animals methyl alcohol produces less toxic effect in single large doses than the same amount of grain or ethyl alcohol, while in man nausea, vomiting, muscular and heart weakness, delirium and coma are much more marked after wood alcohol poisoning. A single large quantity of methyl alcohol is then much more to be fatal in man than the same amount of ethyl alcohol and, when not fatal. optic neuritis and blindness not infrequently follow wood alcohol poisoning.

Apart from the inclusion of wood alcohol there are no changes in this edition, except the omission and correction of tests and the introduction of a few new tests. Toxicology suggests a certain horrid fascination and Sherlock Holmes mystery in criminology which only the perusal of such works wholly obliterates.

WINSLOW.

American Ilustrated Medical Dictionary. (Dorland). A new and complete dictionary of terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Veterinary Science, Nursing, Biology, and kindred branches; with new and elaborate tables. Eleventh edition, revised and enlarged. Edited by W. A. Newman Dorland, M. D. Large octavo of 1229 pages, with 229 ilustrations 141 in colors. Containing over 1500 new terms. Philadelphia and London: W. B. Saunders Company, 1921. Flexible leather, $7.0d net; thumb index, $8.00 net.

This book does not claim to be an encyclopedia. It is a concise and convenient dictionary, aiming to furnish full definitions of the terms of medicine and kindred branches. Special attention is given to the wording of definitions to make them clear and exact. Besides the ordinary dictionary mater, a large amount of information is arranged in tabular form, relating to clinical tables, tests, staining methods, methods of treatment, etc. The illustrations are effective in amplifying the text. This eleventh edition appears two years after the previous one. Even in this short period of time there has been a large addition to technical medical terms. This is a useful dictionary for any physician.

SMITH.

Essentials of Laboratory Diagnosis. Designed for Students and Practitioners. By Francis Ashley Faught, M. D., formerly Director of Laboratory of the Department of Clinical Medicine, Medico-Chirurgical College. Containing 11 full-page plates and 78 text engravings. Seventh revised and enlarged edition. $4.50. F. A. Davis Co., Philadelphia, 1921.

First issued in 1909 as a small handbook of modest volume, this work has increased in size and favor until this, the seventh edition, contains more than 500 pages. The number of editions found necessary, speaks its deserved popularity. It is a very excellent work. There is a tendency to retain methods that are antiquated, as if fearful of departing from long established usage, but as a whole the work is clear, concise and helpful.

WEST.

Lessons on Tuberculosis and Consumption. By Charles E. Atkinson, M. D. 12 mo., cloth, 470 pp., price $2.50 net. Funk & Wagnalls Company, New York City, 1921.

The author, who has recently been medical director of the Seymour Sanatorium at Banning, California, and formerly one of the resident staff at the Pottenger Sanatorium, has written about as complete and sensible a work as is possible for the layman. Indeed, it is remarkable how successful the author has been in presenting the subject in all its scientific and technical aspects, and yet in popular and interesting style, without being either verbose, inaccurate or slushy in expression. The book cannot be too highly commended for the purpose and persons intended.

WINSLOW.

Pharmacology and Therapeutics, Practical Medicine Series. By Bernard Fantus, M. S., M. D., Assoc. Prof. Therapeutics, Rush Medical College; and Preventive Medicine. By Wm. A. Evans, M. S., M. D., LL. D., D. P. H. Prof. Sanitary Science, Northwestern Univ. Medical School. Cloth, 386 pp. Year Book Publishers, 304 Dearborn St., Chicago, 1921.

There is a very good review of the therapy with vaccines and serums. A reaction from the first favorable reports of the use of benzol benzoate is now naturally setting in, as Emge reports that a lighting up of latent inflammatory lesions may occur after its administration, and that it is depressing to the respiration, heart and blood pressure in full doses, and moreover is often inefficient in relieving spasmodic disorders. Digitalis therapy is reviewed extensively. For ambulant patients the large doses of Eggleston are dangerous. About 22 m. is the average dose, giving three drops as equivalent to the minim. An interesting summary of therapy by x-ray and radium is given, and the apparently marvelous effects of sunlight at high altitudes in clear air in the clure of tuberculosis joints, as shown by Rollier in the high Alps.

WINSLOW.

DR. MAYO WILL LECTURE

Dr. Charles H. Mayo will give the Joyce lecture before the Portland Academy of Medicine, Thursday, April 6. He will lecture upon "The Unusual Thyroid Conditions, Substernal, Lingual, Excessory Thyroid Tumors and Thyroid Cysts." The Academy wishes to extend an invitation to all the physicians of the Pacific Northwest to attend this lecture.

NORTHWEST MEDICINE

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ORIGINAL CONTRIBUTIONS

THE PATHOLOGY, DIAGNOSIS AND SURGICAL TREATMENT OF GOITER*

EMIL GOETSCH, PH.D., M.D., F.A.C.S

BROOKLYN, N. Y.

Professor of Surgery and Surgeon-in-Chief, Long Island College Hospital.

In considering a subject as extensive as hyperthyroidism, it is manifestly impossible to present all phases of the subject adequately in the time at my disposal today. I shall, therefore, content myself with giving you a few general conceptions of the problem of hyperthyroidism, following which I may stress a few points in which I have become personally interested, particularly the pathologic divisions of goiter, together with their clinical manifestations and diagnostic difficulties. It is my purpose, therefore, to give a general condensed statement of the story of hyperthyroidism, as I have come to look at it after a detailed study of some 800 patients with thyroid disease, who were subsequently operated upon, and then again studied with reference to their postoperative recovery and cure. I had the privilege of observing and operating on these cases while I was associated with Professor Cushing, at the Peter Bent Brigham Hospital, at Harvard, and later as a member of the surgical staff under Professor Halsted, at Johns Hopkins Hospital. The recent cases I have treated at the Long Island College Hospital. In the time at my disposal it is quite impossible to consider in detail the work which has led up to the conceptions which I shall try to give you.

Hyperthyriodism can be looked upon in the broad sense, either from the point of view of pathologic changes occurring in the thyroid gland or from the point of view of symptoms produced as a result of physiologic hyperfunction or from distinct pathologic change. Accordingly, a patient may have a pathologic thyroid gland and may be symptomatically hyperthyroid or not, depending upon whether or not at the moment of consideration there is a hypersecretion of thyroxin in the circulating fluids. In other words, there may be periods of remissions, even tho the pathology of the gland is constant, followed again by periods of hyperactivity with symptoms. We all know that it is for these reasons that the disease is such a variable one, symptomatically, and that it so frequently presents diagnostic difficulties.

In order to get a proper conception of the pathologic types of goiter, reference to the embyronic origin and subsequent evolution of these types is essential. Briefly, the original thyroid andage, composed of an undifferentiated, structureless mass of cells develops in the first place into small acini, surrounded by a single layer of epithelial cells, containing a characteristic colloid and, secondly, into the so-called fetal or interstitial cells of Cohnheim which remain scattered thruout the gland in the interstices between the normal colloid acini. These cells do not take part in the formation of the thyroid acini or in the formation of colloid. Keeping in mind the two types just mentioned, namely the alveolar or parenchymal thyroid cell and, secondly, the interstitial or fetal call, I may now take up the origin of the different groups of goiter with reference to these two types of cell. In the first place, let us consider the changes which may occur in the alveolar epithelium and which as a matter of fact give rise to the well-known types of colloid goiter, puberty hyperplasia and exophthalmic goiter.

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* Read before the Twenty-Seventh Annual Meeting of Utah State Medical Association, Salt Lake City, Utah, Sept. 13-15, 1920.

The first change, retrogressive in nature and characterized by enlargement of the gland together with an accumulation of colloid in the acini and simultaneous atrophy of the alveolar cells, is found in the simple colloid goiter with which you are all so familiar. This type of goiter rarely produces hyperthyroidism and is, therefore, relatively harmless and seldom surgical. Hence, I shall not elaborate this type in detail.

Let us, however, consider the simpler types of physiologic hyperactivity, associated with only very slight pathologic changes in the gland. It is a question whether one should call these types true pathologic changes or simply physiologic hyperplasias. I have reference to the mild alveolar hypertrophy and hyperplasia with mild to moderate enlargement of the gland, which one sees so frequently in young girls at puberty or soon thereafter and up to and including the early twenties. This is the well-known puberty hypertrophy and hyperplasia, and gives rise to mild hyperthyroidism. Many cases of this kind undergo spontaneous recovery and cure. Some may become chronic or may require medical or surgical treatment. In this type of thyroid gland there is an increase in the size of the cells of the acinus with a moderate amount of alveolar infolding, sometimes an increase and simetimes a slight decrease in the amount of colloid present.

Let us consider the rather common and serious type of pathologic hypertrophy and hyperplasia which one sees in the well known disease of exophthalmic goiter, known also as Graves' or Basedow's disease. You are familiar with this condition which, in its characteristic expression, is typified by the cardinal signs of exophthalmos, enlargement of the thyroid with thrills and bruits in the gland, tachycardia, tremor, loss of weight, and symptomatically by marked asthenia, nervousness, palpitation and dyspnea. In such a gland the mild hyperplasia which I have spoken of as occurring in the puberty hyperplastic gland now becomes truly a pathologic hypertrophy and hyperplasia of extreme degree, resulting in an enlargement of the gland in which the parenchymal or alveolar element of the gland shows the tall protoplasmic cells, a very marked infolding of the alveolar wall and a diminished or an almost absent colloid in the acini.

Keeping in mind now these two hyperactive types which I have just mentioned, namely, the puberty hyperplastic type and the exophthalmic goiter, and remembering that these are examples of hyperplasia occurring in the alveolar cells, that is, the cells bounding the acini, we may now speak of a more common and very different type of pathology. I have reference to the benign growths of the cell rests, familiarly known as the interstitial cells which occur in every normal gland, and which have the power of developing into discrete, circumscribed, encapsulated tumors. These tumors may be single or multiple, varying in size from the head of a pin up to that of a grapefruit or larger, and are known as fetal adenomata. This is the type of goiter which one sees commonly as a nodular irregular growth that is differentiated clearly from the exophthalmic gland, particularly in that exophthalmos, thrills and bruits are rarely found. There is a mild to moderate tachycardia, relatively slight loss of weight, and the symptoms are not so extreme. It is to this group that the great majority of cases of hyperthyroidism belong.

The common impression among many physicians is that a case cannot be hyperthyroidism unless there are present exophthalmos and other eye signs, and a rather marked tachycardia and nervousness. I want to emphasize the error of this conception for the reason that a great many instances of hyperthyroidism will be missed if one expects to find these signs. The adenomata in their growth are capable of enlarging to such an extent as to destroy absolutely the normal thyroid gland, and eventually it is even possible to have hyperthyroidism developed as a result of glandular atrophy, resulting from the pressure produced by large cystic adenomata. In their development they are at first solid tumors which later may undergo degeneration, thus causing one of the well-known common types of thyroid cysts, in which the active adenoma tissue has been destroyed. You will see that it is possible for this degeneration to cause spontaneous cure of the adenoma and thus of the hyperthyroidism which the latter produces. The difficulty, however, is that the adenoma is so rarely single. There may be one large adenomatous cyst on one side of the neck and, unless the surgeon is very careful to explore the opposite lobe, he may readily overlook small adenomata which are the principal causes of the hyperthyroidism of which the patient complains. Should he remove the cystic enlargement he will, of course, fail to cure the hyperthyroidism for which the patient consults him.

I was the first to show, in a paper published in the *Johns Hopkins Hospital Bulletin* in 1916, from the cellular evidence of activity, that the adenomata were of themselves responsible for hyperthyroidism, and that in order to effect a cure all the offending tissue in the form of adenomata must be removed in toto in order to cure the hyperthyroidism and prevent recurrence. In adenomatous goiter medical measures fail, as do also such measures as x-ray or radium. It is distinctly in my opinion a surgical condition which does not yield until a gland resection is done, leaving whatever of the normal thyroid gland there remains. I have never seen symptoms of hypothyroidism appear, no matter how radically I resect, because there are always to be found remains of the normal gland either at the poles or posteriorly in connection with the posterior part of the capsule.

Let me mention now a further type of pathologic change which I have described in a recent number of *Endocrinology,* and which I have termed "diffuse adenomatosis"[2] of the thyroid. Here similarly the new tissue characteristic of this condition develops from the interstitial cells of the thyroid. I have shown that the striking difference between this condition and adenoma consists in the fact that, instead of isolated islands of interstitial cells developing here and there in the gland, the entire interstitial element, otherwise known as the fetal cells of Cohnheim, simultaneously overgrow, causing thus the atrophy of the acinar or alveolar cells in the gland. You will note that this picture is the precise opposite of exophthalmic goiter, in that in the latter there is a tremendous hyperplasia of the acinar epithelium and an almost complete absence of the interstitial cells. I have termed this condition diffuse adenomatosis because of the fact that the interstitial tissue is diffusely scattered throut the gland instead of being encapsulated.

If you will keep in mind these four types of pathologic changes in the thyroid gland, namely, first, puberty hyperplasia; second, exophthalmic goiter (two types of alveolar hyperplasia); third, the adenoma; and fourth, diffuse adenomatosis (the latter two arising from the interstitial cells), you will have a conception of the thyroid pathologic changes which compose by all odds the great bulk of thyroid disturbances. You will note that I have not mentioned the malignant tumors which are rare, namely, carcinoma and sarcoma, nor have I mentioned the primary acute infectious conditions nor the chronic infections, such as tuberculosis or lues, all of which are extremely uncommon, so uncommon that when encountered they are to be regarded as curiosities.

Thus far I have tried to give you an outline of the common forms of goiter and I shall now direct your attention to a consideration of the symptoms produced and thus to a clinical conception of hyperthyroidism. Let me, therefore, take you back again to the pathologic types and I shall try to give you a symptomatic picture of these types in turn. Let us first take up the puberty hyperplastic type. In this condition there is usually a mild to moderate hyperthyroidism which expresses itself in increased nervousness and irritability, a high strung temperament, emotionalism with oftentimes depression and crying spells, some tachycardia and palpitation, shortness of breath on exertion, weakness and loss of weight, vasomotor changes with sensations of heat and cold, cold, clammy hands and feet, and a slight to moderate enlargement of the thyroid gland which, however, rarely ever exhibits thrills or bruits. The eye signs are usually negative, but occasionally there is a suggestive von Graefe. The disease may occur at puberty and may continue over a period of ten to fifteen years. Variability of symptoms is also a common finding. A short vacation, a change of environment and rest may be sufficient to render the patient quite well, the difficulty being that as soon as the old associations and environments are again reestablished the disease may relapse.

I would caution you against the impression that, because the enlargement of the gland with its associated symptomatology occurs in a young girl, it is relatively harmless, and that the patient may outgrow it or that some other unexpected improvement may occur. In other words, delay in cases of this kind is often dangerous and harmful. The harmful effects are not only those of an absolute damage to the patient's constitution, but also to my mind of a social nature, since the onset of the trouble occurs in the early formative period of the young girl and may, therefore, interfere very seriously with her education, for example, or with her health generally, and with normal social contacts. I have seen many instances of expectant treatment where it has been necessary to take a young girl out of school or college because she was too nervous or too fatigued to continue her studies. I have seen patients taken away from their normal surroundings, from their homes and friends and sent into the country or to resorts for considerable periods of time. They were denied, furthermore, both at home and elsewhere the benefits of physical exercise and failed absolutely in preparation for marriage, motherhood and a self-supporting life. When one considers the disease from this standpoint, one sees how serious the condition really may be. Indeed, a possible severe exophthalmic goiter may develop in an unchecked case. She should not be denied the benefits of surgery.

Let us now consider the symptomatology as we find it in an extreme type of hyperthyroidism, namely, in exophthalmic goiter. Here the patient is suffering primarily from the results of an overamount of thyroxin, the specific secretion of the thyroid gland which, by the way, has now been isolated in crystalline form by Kendall, of the Mayo Clinic, and which, as you well know, is an extremely toxic body comparable to aconite in its potency. One four-hundredth of a grain is capable of producing symptoms in an animal and even in man. The principal signs in exophthalmic goiter are exophthalmos and a large thyroid gland which is extremely vascular and shows thrills and bruits over the thyroid arteries. These are the striking features of exophthalmic goiter as against other forms, namely, puberty hypertrophy, adenoma and diffuse adenomatosis. Furthermore, there is tachycardia, rather marked loss of weight, tremor and perspiration together with vasomotor instability. The symptom which I wish to emphasize is weakness. This is so common, so early and marked, that I have come to regard it of more importance even than nervousness. Patients in the extreme stage of the disease who have practically denied being nervous, have been subject to great fatigue and inability to do things. Furthermore, there is palpitation, dyspnea, emotionalism, throbbing and increased perspiration.

Coming now to the pathologic overgrowths, arising from the interstitial tissue and leaving aside for the moment the hyperplasia just mentioned, we may take up that group of goiters of an adenomatous nature[3], which forms by all odds the greatest percentage of cases of goiters producing hyperthyroidism. As mentioned, the peculiar feature of this type of goiter is the presence of benign encapsulated new growths in the gland, which begin as early as puberty and often progress thruout the life of the patient. The normal thyroid tissue is caused to atrophy by the pressure of these growths and may be finally completely destroyed. They may be so small at the beginning as to be overlooked, since they are neither visible nor palpable externally, but they may even at this early stage produce symptoms of hyperthyroidism, the origin of which is often obscure unless one recognizes this fact. I have frequently uncovered numerous small adenomata in the thyroid gland in cases which I thought were chronic hyperthyroidism and which gave a typical symptomatology and reacted positively to my epinephrin test. Previously these cases were totally obscure, the diagnosis was difficult, and the patient went from physician to physician in search of relief. The patient with adenoma is not in any sense to be confused with one suffering from exophthalmic goiter, and I may mention a few of the striking differences presented on examination and symptomatology.

The patient with adenoma very often has a long chronic complaint, oftentimes dating back to puberty. The syndrome is that of chronic fatigue, asthenia, labile irregular pulse, easily stimulated by emotion. Depressions are very common indeed, as are also fears of going insane. Patients will often talk of suicide. There is a mild to moderate loss of weight not so extreme as in exophthalmic goiter; vasomotor instability is common; there is often a slight elevation of the temperature, tremor, and a further striking feature is that tachycardia may or may not be present. The features distinguishing adenoma from exophthalmic goiter are primarily that there are no eye signs nor exophthalmos in the former and the gland is not vascular as in exophthalmic goiter. There are no thrills or bruits, and the other circulatory signs, such as throbbing of the large vessels and of the precordium, are absent. The whole symptomatology is likely to be a chronic one as against a more acute one in exophthalmic goiter. Whenever one finds a definite nodule or nodules in the thyroid, one can be perfectly sure he is dealing with adenoma. Should the symptomatology which I have mentioned be obtained, it is most likely dependent upon this thyroid pathology, since in no other type of goiter that I am aware of, does one find these characteristic, circumscribed, hard, often very tender nodules. The exophthalmic gland is more uniformly enlarged and has an elastic, slightly granular feel. The colloid goiter and the puberty hyperlastic gland are more uniformly enlarged, have an elastic feel and a rather smooth surface contour.

Since adenomata, as I have shown, are actively secreting structures, since the toxin which they elaborate is the same or very similar to the thyroxin elaborated by the normal gland, and since they are unaffected by any of the ordinary measures used in medical treatment of goiter, I feel that I am safe in saying that whenever an adenomatous gland is found, even tho the adenomata be small, and when the characteristic symptomatology is present, the condition is a surgical one. One cannot expect improvement or cure until all of the adenomata or the adenomatous tissues are completely excised. The results in this group of cases are really brilliant because, in adenoma as against the conditions in exophthalmic goiter, all of the offending tissue can be removed and, therefore, cure can be expected, whereas we all know one cannot remove all of the exophthalmic gland with safety. As I stated before, there is always some normal thyroid tissue remaining after adenoma excision. It may be small in amount, and I believe that this small amount of thyroid becomes active and can meet all the needs of the normal metabolism.

Lastly, let me say a few words about a very interesting condition which has come to my attention in the last few years. I believe that it is a new clinico-pathologic syndrome in thyroid disease, and I have given it the name of diffuse adenomatosis. In this condition there is a very marked hypertrophy and hyperplasia of the interstitial cells of the thyroid and an atrophy of the normal parenchyma. The gland is either not enlarged at all or only slightly and, therefore, frequently escapes notice. Thrills, bruits and nodules are not made out. The characteristic syndrome of loss of weight, asthenia, nervousness, labile pulse, and slight elevation of temperature, frequently brings these people to the physician who may suspect tuberculosis. I have had a number of patients belonging to this group who have been treated for months to years at tuberculosis sanatoria with little or no improvement under the impression that their symptomatology was due to tuberculosis. In diffuse adenomatosis there are no eye signs to help one. A chronic symptomatology is obtainable; the epiniphrin test is positive and this fact has brought them to my attention. I have operated upon a series of fifteen to twenty of these patients, and have been very much encouraged by the favorable results which in most cases have followed thyroid resection when all other measures, even over long periods of time, have failed

I have discussed the pathology and symptomatology of these different groups of thyroid disease because diagnosis naturally rests so largely upon them. There are, however, some other diagnostic aids which I have not mentioned and which are in the nature of clinical tests. I refer to the metabolic rate determinations and to my own epinephrin test for hyperthyroidism. It has become quite well established now that the active principle of the thyroid, namely, thyroxin, is the principal regulator of metabolism in the body. When thyroxin is present in increased amounts, it increases the metabolic activities of the cells in the body, and when in deficient amounts the metabolic processes are inhibited. With an increase in the metabolism there is naturally an increase also of the oxygen consumption and the carbon dioxide output of the individual, which is proportional to the increase of the metabolism. We feel, therefore, that by the determination of this gaseous exchange a considerable light is thrown upon the degree of thyroid overfunction, and in general it has been established that the rate runs quite parallel, tho not absolutely so to the amount of thyroid overactivity. When properly carried out, the metabolic test is a valuable aid in the interpretation of any thyroid state. I wish to caution, however, against results obtained unless the method is most carefully controlled and most carefully carried out, otherwise faulty conclusions will be drawn. It requires an expert and is accompanied by some annoyance to the patient, since she must be without food for twelve to fourteen hours before the test is done, and must be absolutely quiet in bed for several hours before and after the test. Some rather noticeable exceptions have been found, where the metabolic rate did not seem to run parallel to the clinical degree of toxicity, and again there are certain conditions which give increase of metabolic rate, such as most fevers, leukemia, diabetes, acromegaly, arteriosclerosis, nephritis and some others. However, it is of great value as a diagnostic aid in the study of thyroid disease.

In this connection, I wish to state that during the past year all cases of thyroid disease coming to my clinic at the Long Island College Hospital were examined both as to their hypersensitiveness to epinephrin and their basal metabolic rates. I am pleased to report that on the basis of my observations in these cases there has in general been a very close parallelism between the degree of reaction to my test and the increase in metabolism as expressed by the basal metabolic rate. The exceptions have been so few as not to seriously influence such generalization.

My epinephrin test depends upon the fact that in an organism in which there is an overamount of thyroid secretion present, the sympathetic nervous system is sensitized to the action of epinephrin. I have found after study of over eight hundred cases that in clinical states of hyperthyroidism the patient reacts positively to the subcutaneous injection of 0.5 cc. of one in one thousand adrenalin chloride solution, a dose to which a normal individual does not react. A positive reaction consists of an increase of over ten points in pulse or blood pressure or both, and an increase in the respirations, and an exacerbation of the clinical signs and symptoms which the patient presents, namely nervousness, throbbing, asthenia, hot and cold sensations, tremor, vasomotor sensations, and oftentimes an increased emotionalism. In an hour to an hour and a half after the injection of the epinephrin the status of the patient is usually quite normal. The degree of reaction is in proportion to the degree of toxicity present. I have found that all cases of hyperthyroidism react to the drug. If the reaction is negative and we are considering, for example, a borderline case, we know absolutely that the case is not one of hyperthyroidism. There are a few types of borderline cases, such as certain neuroses, asthma and neurocirculatory asthenia, in which an atypical response is obtained. I have found no difficulty with this type of reaction which is usually brief and does not show the characteristic hyperthyroidism response obtained in true types of hyperthyroidism. A positive test has helped me in determining whether the case is truly hyperthyroid and whether thyroidectomy should be done, or whether continuance of medical measures should be advised, and it is this positive test which has helped me so much in the fourth group, which I have termed diffuse adenomatosis and which heretofore has been so baffling. I have advised operation also in the adenoma group, in which the adenomata were too small to be seen or felt before operation and to my delight I have been able frequently to uncover at operation a small adenomatous gland, and have had splendid results from resection, as has been shown in the postoperative study of these cases. There is a very noticeable gain in weight, from ten to forty pounds, with a complete or very nearly complete relief from the distressing symptoms which the patient showed for so long a time before operation.

Unfortunately the published reports by several investigators of studies made upon so-called effort syndrome, neurocirculatory asthenia, irritable heart and simulting conditions with reference to epinephrin hypersensitiveness and basal metabolism determinations, are not accompanied by pathologic studies on the thyroid gland and are therefore certainly inconclusive. We all recognize the difficulty, in fact the impossibility of diagnosing a borderline nervous state as a positive thyroid disorder. For a final clinching diagnosis one must be able to demonstrate a pathologic change in the thyroid itself. I wish to state that my clinical impressions and the results of my epinephrin hypersensitiveness test and the basal metabolic determinations have been checked by careful histologic examinations upon the thyroid tissues excised at operation. These examinations included not only the routine gross and microscopic observations but also the finer cellular studies with particular reference to the protoplasmic structures known as mitochondria, which are better criteria for cellular activity than the grosser histologic methods commonly in vogue.

The epinephrin test has some very distinct advantages over the metabolic determination. It can be carried out by anyone familiar with the use of the blood-pressure apparatus and the hypodermic syringe. I have had fourth-year medical students frequently carry out these tests very efficiently. It is inexpensive, is not subject to technical error, as are the metabolic determinations, and in my opinion it has also the great advantage of revealing very mild states of hyperthyroidism or the disease of hyperthyroidism during one of its remissions, at which times the metabolic rate determinations may be within normal limits, and thus fail to reveal the fundamental cause for the patient's complaint. In both instances, however, great aid has been given to the more modern methods of detecting hyperthyroidism and, since both give us an idea of the degree of toxicity present, we know something of the patient's ability to withstand surgical operation. Thus, when the metabolic rate is high when the epinephrin test is unusually positive, we are frequently lead to do preliminary ligations in exophthalmic goiter with consequent lobectomies which then are safe, whereas, should a lobectomy be done at once, a fatal outcome form precipitation of hyperthyroidism after operation may result.

Again, the progress of a case can be followed for, with clinical improvement, the metabolic rate goes down and approaches the normal, and similarly there is a gradual disappearance of the hypersensitiveness to adrenalin. In the treatment of hypothyroid states the feeding of thyroid extract is guided by both tests; the gland is given up to the amount necessary to obtain a normal metabolic rate or a just beginning sensitiveness to epinephrin. Before gland feeding in the hypothyroid state the metabolic rate is below normal and the tolerance to adrenalin is oftentimes double that seen in a normal person.

I may briefly summarize the treatment of hyperthyroidism by saying that in the simple colloid goiter iodine therapy is frequently followed by very brilliant results, namely, in the reduction of the size of the gland. These are instances in which there is simply an enlargement of the gland which may be annoying or which may produce mechanical pressure upon the trachea or large vessels of the neck.

In puberty hyperplasia a period of rest and medical measures, together with small amounts of iodine, are sometimes sufficient to obtain relief. Many cases may also obtain relief or spontaneous cure without any treatment whatever. I would, however, feel that when these measures fail one should not procrastinate too long because the relief from a thyroid resection is very prompt and lasting, and the operation in these instances is very safe indeed.

The exophthalmic goiter cases should have similar advantage of medical treatment, but here again, when medical measures have not produced the desired improvement in three to six months' time, surgery often gives splendid results and, if operation is decided upon, it should be done before permanent damage has been done to the heart, kidneys and nervous system, because otherwise, even tho the hyperthyroidism is relieved, one cannot hope to restore the permanently damaged tissues. X-ray and radium seem to give some relief but in the hands of those who have treated series of cases I have failed to see results in any measure comparable to those obtained by surgical measures. The treatment is carried sometimes over two to three years time and during this interval serious damage can readily be done.

The adenoma operation is very safe indeed. I have never lost a patient belonging to this group, and results are often immediate and recurrence practically never occurs, if operation with the removal of adenomatous tissue is carried out.

In diffuse adenomatosis double resection with reduction of the gland tissue to one-fourth or possibly even one-fifth of its amount is necessary to obtain relief. One need not fear hypothyroidism if the gland is reduced even to this amount. On the other hand, if only one side is resected the benefit is only slight. I have omitted the detailed technical account of the operation in the different types of goiter, for this would lead me too far afield in a general survey of thyroid disease, as I attempted to give it to you this afternoon.

Finally, in all cases of hyperthyroidism, regardless of eventual measures, it is advisable to give the patient the benefits of a preliminary rest period, preferably in bed. A low protein diet is recommended. Chronic and focal infections should be treated, for doubtless an underlying hyperthyroidism can be aggravated by infection and absorption. However, I am not one of those who believe that frank hyperthyroidism is caused by chronic infection. Removal of the infectious process often improves the general health of the patient to the extent that she is better able to cope with her thyroid disorder. I have seen too many cases of hyperthyroidism, in which no foci could be found and others, in which after thoro attention to all possible surces of toxic absorption, the course of the hyperthyroidism was absolutely uninfluenced. Furthermore, I have yet to see a series of cases treated by x-ray, in which the results were at all comparable to those obtained by surgical means. In general, whenever any form of treatment fails within a reasonable time, I feel that recourse should be had to surgery. I have seen serious results follow procrastination.

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TECHNIC OF OPERATION FOR GOITER TO IMPROVE POSTOPERATIVE COSMETICS*

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"Is the operation going to leave a bad scar?" This is the question every surgeon has to answer to more than two-thirds of patients with surgical goiter. After the question is answered, it is up to the surgeon to use every precaution possible tending against a deformity, defective scar or blemish.

In any operation for goiter, which is intended for good cosmetics, the anatomic structures must have a minimum amount of disturbance and, in closing, be returned to normal positions. A thoro knowledge of the anterior neck is essential to carry out these two operating principles. Good cosmetics can only be obtained by careful dissection, retention of size, shape and position of muscles and perfect apposition of skin flaps.

In many patients we have seen a one-sided deformity, following the complete removal of one lobe and isthmus and, even where a bilateral resection had been done and a small adenoma overlooked, its subsequent growth caused the same one-sided appearance. Atrophy of the muscles on one side will give a lop-sided appearance of the neck which is unsightly (fig. 1, a and b).

The more common deformities occur in the line of the skin incision. First, a wide scar re-

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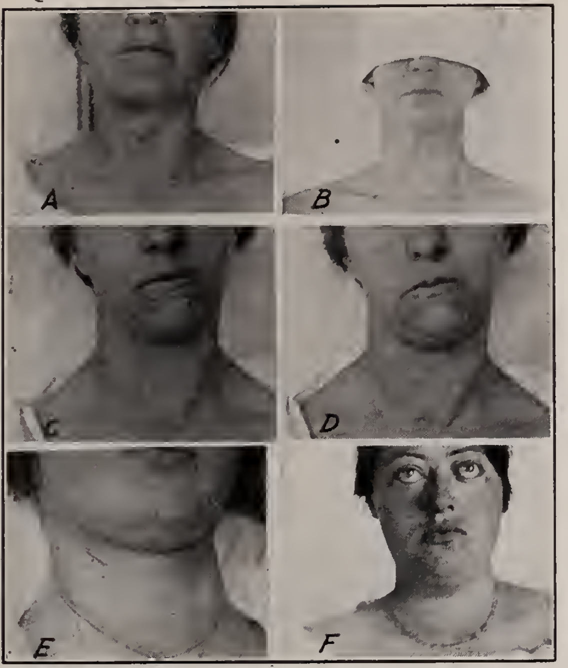

Fig. 1. Deformities and bad scars. (A) atrophy of ribbon muscles on right side. (B) adenomatous growth in left lobe after two previous operations. (C and D) the latter taken during act of swallowing, drawing upward of scar at point of exit of drainage. (E) condylomatous scars; patient had a tuberculous diathesis. (F) resulting scar after third operation for removal of adenomata; had symptoms of dyspituitarism.

sults from poor apposition of the skin or by the platysma tugging on the skin edges during the process of healing; secondly, a thick scar from a beveled incision or infection; third, drainage in the median line, especially where it is more or less prolonged, will cause a drawing upward at this point of the scar (fig. 1, c and d).

In certain individuals with a tuberculous diathesis or with symptoms of dyspituitarism, a condylomatous scar will eventually result, no matter how carefully the skin is sutured. Removal of scars in these patients is only followed by recurrence (fig. 1, e and f).

It is not our intention to advocate a more tedious and time-consuming procedure, in any case that would be considered a poor surgical risk. The factors of time and type of operation have been the means in more recent years, and will be in the future, to decrease the mortality rate in thyroid surgery, and should always be considered by the individual surgeon.

The following technic has been carried out in fifteen cases, the surgical risk being considered excellent in each case, and will be described under: (1) Approach, (2) resection of gland and drainage, and (3) repair.

(1) Approach. The incision is outlined before the patient enters the hospital. With the patient in the upright position the head is flexed half way to the chest, which makes visible a natural crease low down on the neck above the sternum and, with a 15 per cent silver nitrate solution on the butt of a straight needle, dots are placed at intervals along this crease. At the time of operation and when the head is in the extended position, the obliterated crease is easily followed in making the incision by the resulting black dots. In different types of necks or in large growths, the location of the incision is not a matter of guess work and, by following this ever present crease, the resulting scar is more or less camouflaged.

Before the incision is made cross fire markings are made at intervals, with the biased point of the knife, care being taken not to penetrate the dermis (fig. 2, a). In a curved incision these marks will prevent a biased apposition of the skin when repaired. The incision is made thru the skin down to the platysma, length depending upon size of growth and muscular development, but is made of equal lengths on each side of the median line. Each flap is undermined for one inch and, by undermining well at each angle, a good exposure is obtained by a comparatively short incision (fig. 2, b).

Inasmuch as undermining of skin flaps is a well known principle in plastic surgery, such as a harelip operation, it would seem the same principle should apply in the this operation. Elasticity of the skin is overcome by proper stitching and, by freeing the skin from the platysma, which does not heal by immediate union as does the skin, the recoil of a cut muscle is thereby taken away from the skin edge.

The platysma is incised in the same line as the skin, but is continued underneath each undermined angle. Then each flap is dissected from the deep cervical fascia covering the anterior triangle of the neck and sternomastoids, one-inch from the line of incision (fig. 2, c). Instead of continuing the dissection of the upper flap of the platysma, as in the more commonly used technic, the anterior jugulars are clamped

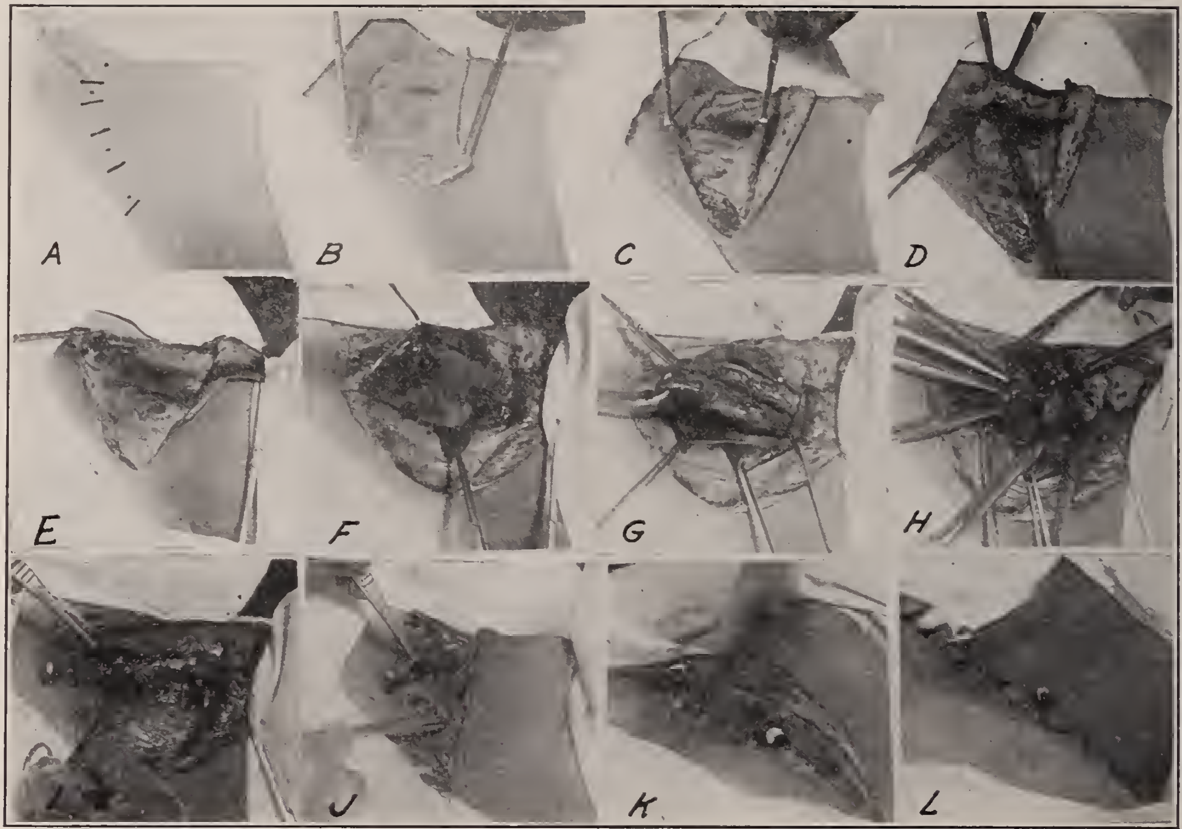

Fig. 2. Important steps of operation. (A) silver nitrate dots to accurately locate line of incision in natural crease and "cross fire" markings to facilitate apposition of skin edges. (B) skin flaps undermined. (C) platysma incised and flaps turned back to expose fascia. (D) lateral incision of fascia one-half inch outside anterior border of sternomastoids and anterior jugular veins clamped. (E) flaps of fascia covering sternohyoid, omohyoid, and sternomastoid muscles turned back. The upper flap has the appearance of a "trap door" and is anchored by Allis forcep on each side to a towel drawn taut under the chin. (F) separation of sternohyoid and omohyoid muscles on left side. (G) sternothyroid split and lower pole grasped with tonsil forcep. (H) left lobe resected and hemorrhage controlled by forceps. (I) cigaret drain in place and sternohyoid and omohyoid muscles brought together. (J) fascia sutured in a transverse line between drains—then latterly above each drain. (K) cut edges of platysma inverted and brought together by fine catgut. (L) apposition of skin edges with subcuticular stitch between and on each side of drains, each end anchored by a piece of rubber tubing.

and the deep cervical fascia is incised in the same line as the platysma, from the center to one-half inch outside the anterior border of each sternomastoid muscle (fig. 2, d). Then, with tension on upper flap and incising the fascia upward on each side, keeping one-half an inch outside the anterior border of the sternomastoids, the fascia is dissected from the sternohyoid, omohyoid and thyroid cartilage to the upper border of the latter. The only bleeding encountered is the cricoid vein which is easily clamped and tied. The lower facial flap is dissected downward for one inch. The clamped anterior jugulars are tied and the upper flap is anchored on each side with an Allis forcep to a fixed sterile towel drawn across underneath the chin. This gives the appearance of a "trap door" flap and allows a more extended retraction outward and backward to the sternomastoid muscles (fig. 2, e).

Selecting the more prominent side, the omohyoid and sternohyoid muscles are separated by an incision at the upper third and the lower parts bluntly with the finger to avoid injury to the branch of the descendens hypoglossi nerve, going to the sternohyoid muscle (fig. 2, b). The sternothyroid is incised parallel to its fibers at about one-third distance from the median line, and by blunt dissection with the fingers the lateral, and median lobes if desired, can be delivered, using blunt hook retractors to displace the uncovered and separated muscles; furthermore, a visible access to the superior and inferior thyroid arteries is obtained.

(2) Resection and drainage. In the majority of cases resection is more easily made by lifting the lower pole from its bed with a heavy

tenaculum or tonsil forcep, then applying forceps to control bleeding anterior to the posterior capsule and leaving a thin layer of healthy gland tissue. By exerting moderate tension the posterior capsule is more plainly visible. The dissection is carried upward and includes the lateral or lateral and median lobes as desired, the superior vessels being the last to be clamped (fig. 2, g and h).

When an adenomatous growth extends well up to the superior pole or where there is a large substernal extension, beginning at the upper pole and resecting downward may be easier to control hemorrhage. After hemorrhage is controlled with catgut ligatures, the posterior capsule is palpated for any small adenomatous nodules which, if found, are removed. Approach is then made between the omohyoid and sternohyoid muscles on the opposite side and resection of that lobe is accomplished.

For each side a cigaret drain (gauze tape loosely drawn thru a Penrose soft rubber tube) is used. The amount of gauze tape protruding beyond the end of the tube depends upon the need for packing to control oozing from the remaining gland tissue. The outer end of the drain passes anteriorly thru the skin incision internal to the anterior border of the sternomastoid muscle. Two drains are used in a bilateral resection.

(3) Repair. The two different layers of separated muscles are then sutured with fine catgut on each side, first the split sternothyroid which covers the remains of the lateral lobe, then the separated omohyoid and sternohyoid are joined by fine catgut (fig. 2, i).

The incised deep fascia is sutured in transverse diameter between the exit of the two drains with No. 1 catgut, and then on each side above the drains to the deep fascia covering the sternomastoid muscles with fine catgut (fig. 2, j). The platysma is sutured with fine gut, care being taken to invert the cut edges (fig. 2, k).

Lastly, the skin is brought together with a continuous subcuticular stitch, using imitation horse-hair. Each end, at the exit from the skin, is anchored to the distal wall of a piece of rubber tubing, the sutures being pulled tight. The tubing maintains a springy tension which prevents cutting, where the suture perforates the skin (fig. 2, l).

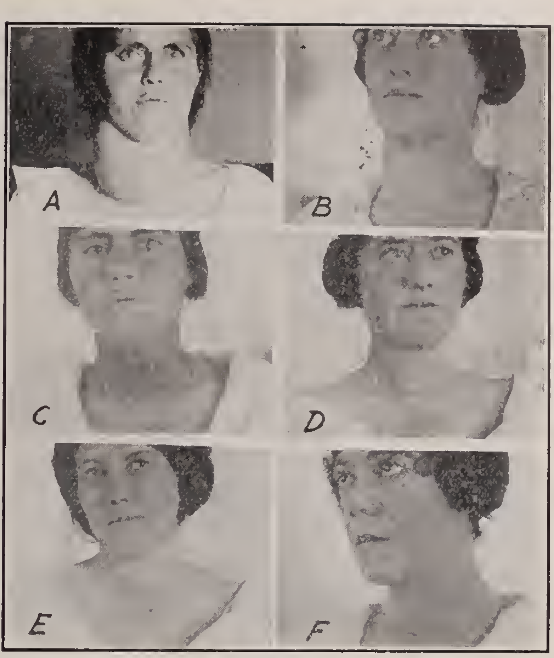

Fig. 3. Some results obtained by technic. (A. and B) before operation. (C and D), respectively, four weeks after operation. (E and F) different patients three weeks following operation.

Twenty-four hours after the operation the tube at one end of each suture is clipped off and each drain loosened. At the end of forty-eight hours the sutures and usually both drains are removed, where there is considerable drainage being an exception, in which case the drain is removed on the fourth or fifth day.

Conclusions. While this technic requires more tedious work for the individual case, it has the following advantages in giving better and more uniform cosmetic results.

(1) By obtaining perfect anatomic apposition of the skin and removing the retracting effect of the platysma from the skin edges, immediate union is favored which should always be the aim in any exposed part of the body.

(2) By separating the muscles and following fascial planes, symmetry of the neck is preserved and functioning of the muscles maintained.

(3) A good visible exposure aids in the prevention of unnecessary hemorrhage and militates against overlooking any abnormal potential growths in the gland tissue.

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THE VALUE TO THE SURGEON OF THE BASAL METABOLIC RATE IN TOXIC GOITER*

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The recent development in our knowledge of the physiology of the thyroid gland has not only made necessary a re-study of its lesions, but has made necessary a restudy of its lesions, but has logy, pathology and clinical manifestations. In 1893 Frederich Muller observed that a patient with hyperthyroidism was not only losing weight on a diet greater than normal, but that the nitrogen output was greater than the nitrogen intake. Later Magnus-Levy showed that there was an increase in the metabolic rate in hyperthyroidism and a decrease in hypothyroidism, and that the latter could be overcome by feeding thyroid extract. Gephart and Dubois determined the basal metabolic rate in normal individuals and later Dubois, Benedict, McCaskey and others proved the definite relationship between the basal metabolic rate and thyroid activity.

Kendal, in 1914, isolated the active principle of thyroid secretion, which he called thyroxin, and has since proved that it will produce the same symptoms in animals that are present in hyperthyroidism in man, with the exception of exophthalmos. Plummer and Janney have confirmed the work of Kendal in the use of thyroxin clinically. Plummer has also shown in his work in hypothyroidism that one-third of a milligram of thyroxin will raise the rate one per cent in patients weighing one hundred fifty pounds; that it requires a few hours after the injection of thyroxin for the rate to begin to rise, and that the high point is not reached for about ten days. After the rate is raised to normal, it requires about twenty-one days for it to come back to its former level, while clinically the patient shows the effect of the thyroxin for a longer period of time.

Accepting as proved, first, that the thyroxin of Kendal is the most important, if not the only active constituent of the thyroid secretion; second, that the constitutional symptoms and signs observed clinically in thyroid lesions are due to a variation in the thyroxin secretion; and, third, that the basal metabolic rate varies directly with the secretion of thyroxin, then the lesions of the thyroid gland, the basal metabolic rate, and the clinical manifestations should be studied in their relationship to each other and to definite forms of therapy. It was with this in mind that this work was undertaken.

During the past eighteen months the basal metabolic rate has been determined in all cases of goiter seen, at the time they were examined and from time to time thereafter, insofar as it was possible. In the cases of hyperthyroidism that were regarded as surgical, the following method has been followed, for the most part, after the examination and determination of the basal metabolic rate: One superior pole was ligated and the rate again observed; then the other superior pole was ligated and the rate observed, until it had fallen as low as it would go. A subtotal, double lobectomy was then done and the rate was observed from time to time. Microscopic sections were made from the upper, lower and middle portions of each lobe and studied in relationship to the clinical findings and basal metabolic rate. While the number of cases seen has been small, I believe the method used and the carefulness with which they have been studied warrant the observations that have been made.

Pathologically, I have classified the cases according to the following outline:

I. Inflammations.
II. Hypothyroidism.
    A. Atrophy.
    B. Colloid goiters.
    C. Degenerations.
III. Hyperthyroidism.
    A. Hyperplastic or exophthalmic goiter.
    B. Cardiovascular goiter.
        1. Adenoma.
            a. Fetal.
            b. Colloid or adult.
            c. Mixed.
        2. Adenomatosis.
        3. Compensatory hypertrophy.
IV. Neoplasms.
    A. Benign.
        1. Toxic. These belong under cardiovascular goiter.
        2. Non-toxic.
    B. Malignant.
        1. Carcinoma.
        2. Sarcoma.

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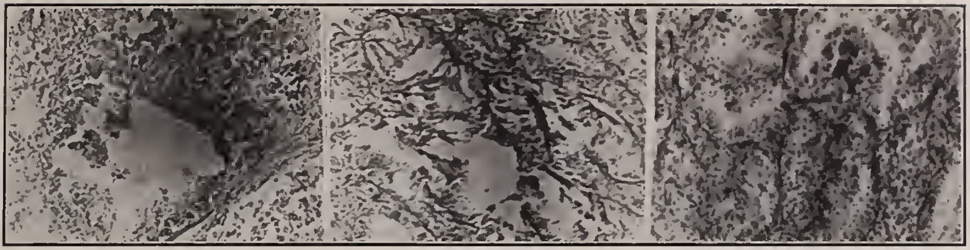


1 2 3

Fig. 1, First stage hyperplastic goiter. Fig. 2, Second stage, hyperplastic goiter. Fig. 3, Third stage, hyperplastic goiter.

Inflammations. I have seen no acute inflammations of the thyroid gland since I have had the basal metabolic apparatus. Chronic inflammatory processes and scar tissue from former inflammatory processes were seen, but there was no evidence that they produced any change in the basal metabolic rate.

Atrophy. No cases of atrophy were studied. Small localized atrophic processes were seen, but these were of no significance so far as changes in the basal metabolic rate were concerned.

Colloid goiter. Primarily, all colloid goiters are deficiency goiters. With a demand for an increase in the secretion of thyroxin there comes an increase in the amount of colloid secreted, the accumulation of which distends the acini and thus increases the size of the thyroid gland. When this distention is marked, the epithelial cells are flattened and their power to secrete thyroxin is reduced, thus decreasing in place of increasing the amount of thyroxin secreted. In the cases studied, the rate was either normal or slightly subnormal, except in two cases. In one it was thirty per cent below the average, and in the other twenty-seven per cent. In cases in which compensatory hyperplasia develops and the process does not stop when the secretion of thyroxin becomes normal in amount, but goes on to an excess secretion, the patient becomes a hyperthyroid and should be placed under the cardiovascular group. Parenchymatous hyperplasia also develops on top of a colloid goiter, sometimes. Pure colloid goiters require removal only when they produce mechanical symptoms or when very large for cosmetics reasons.

Degeneration. Only small localized degenerative processes were seen and so far as I could determine they had no influence upon the basal metabolic rate.

Hyperplastic goiter. This is a distinct clinical and pathologic entity, running a definite course, during which there is a fairly definite relationship between the pathologic and clinical manifestations. The pathologic course may be divided into four stages: First, the stage of development. Microscopic examination shows that there is a diffuse hyperplasia and hypertrophy of the parenchyma with an increase in the size of the blood vessels. The acini are lined with tall, columnar epithelium, contain but little or no secretion, and have, projecting into them, papillomatous-like masses. The absence of secretion in the acini is not to be taken as an indication that the thyroid gland is not secreting. The purpose of colloid material is to act as a reservoir to hold thyroxin and regulate its absorption, and it is not absorbed readily. In hyperplastic goiter the thyroxin is not only secreted more rapidly than normal, but on account of the absence of colloid secretion it is absorbed as rapidly as it is secreted (fig. 1).

Second, the stage of maximum intensity. As the hyperplasia increases, the acini may become completely filled with papillomatous masses. In this stage secretion begins to accumulate in the acini, distending them more or less. This secretion takes the eosin stain faintly at first, indicating that colloid is again being secreted (fig. 2).

Third, stage of retrogression. The acini are distended with a deeper staining secretion and contain desquamated cells singly or in masses. The epithelial cells lining the acini approach the normal in size and arrangement, altho hyperplasia and hyperthrophy are still present (fig. 3).

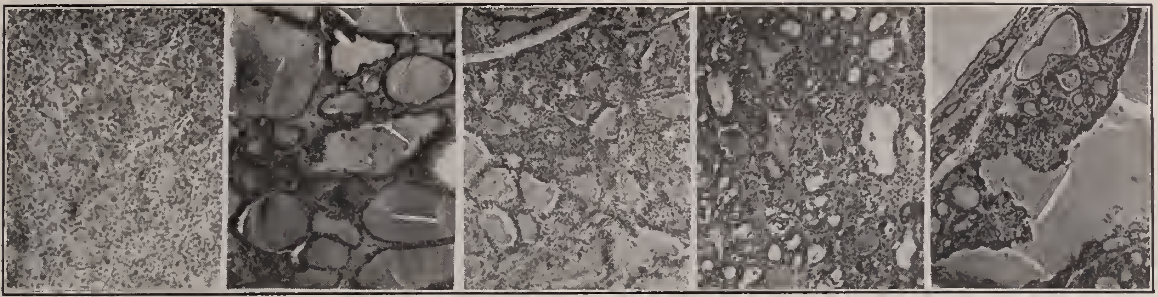
Fourth, stage of remission. Altho the pathology in the first three stages is fairly constant, in the fourth stage there is considerable difference in different cases. Two cases in this stage were studied. In one the acini were moderate in size, fairly even, and filled with colloid material that had a somewhat granular appearance. Some areas showed evidence of epithelial hyperplasia but only rudimentary papillomata were present. A loose connective tissue separated the acini into groups. In the other there was much hyperplasia and hypertrophy. Papillomatous masses were present and in some fields the majority of the acini contained no secretion. In other fields the acini were distended with secretion, some of which stained with eosin and some of which did not.

Clinically, with the exception of the stage of remission, the symptoms correspond quite closely to the pathologic process both as to the course and intensity. Plummer has listed the symptoms in their usual order of occurrence as follows: cerebral stimulation, vasomotor disturbance of the skin, tremor, mental irritability, tachycardia, loss of strength, cardiac insufficiency, exophthalmos, diarrhea, vomiting, and mental depression. In the stage of remission there are persistent symptoms, the intensity of which vary with the intensity and frequency of the attacks.

The basal metabolic rate begins to rise in hyperplastic goiter before the symptoms appear. The length of time elapsing between the beginning of the rise in the rate and the appearance of the symptoms varies with the intensity of the disease. Uusually symptoms appear shortly after the rate begins to rise and follow the rate until the height of the disease is reached. They then run along about parallel until improvement starts, when the rate begins to drop and drops more rapidly than the symptoms. In mild cases the symptoms follow the rise and fall of the rate quite closely, but in severe cases the symptoms do not develop as rapidly as the rate increases, and fall much more slowly in the third stage than does the rate. In some cases the patient completely recovers and the rate and symptoms become normal, but many cases pass into the stage of remission which is followed by recrudescence. In the stage of remission the rate is around the normal, often being slightly subnormal. In one case studied, which was in the stage of remission, considerable damage had been done to the heart, so that, while the patient was under observation previous to operation, she had cardiac manifestations following exertion or excitement, altho the basal metabolic rate was persistently between the average and lower normal limit.

Following an attack of hyperplastic goiter, there are six possible terminations: (1) complete recovery in which the rate becomes normal and the symptoms disappear; (2) stage of remission in which the symptoms persist but the basal metabolic rate is usually within the normal limits or slightly below; (3) partial remission in which there is not only persistence of the symptoms but also an increased rate indicating that there is a continuous oversecretion; (4) complete recovery so far as the thyroid gland and its secretions are concerned, as evidenced by a normal basal metabolic rate, but a persistence of certain of the symptoms, such as a rapid heart, exophthalmos, tremor and mental irritability, because of permanent lesions produced by the action of the thyroxin; (5) hypothyroidism due to overdestruction of the secreting cells in the stage of retrogression. In this condition, the basal metabolic rate is below normal and the symptoms of hypothyroidism may be present; (6) hypothyroidism with symptoms of hyperthyroidism. The former is due to overdestruction of epithelium or its inability to secret sufficent thyroxin, and the latter is due to permanent lesions produced by the thyroxin during the height of the disease.

Cardiovascular goiter. This is a clinical but not a pathologic entity, as there are three types of lesions: adenoma, adenomatosis and compensatory hyperplasia, which will produce the clinical picture. The symptoms are slow in developing and resemble those produced by other slowly administered toxines. Exophthalmos and the acute toxic symptoms seen in exophthalmic goiter are absent. Tremor, tachycardia, mental irritability, loss of strength and cardiac changes are present but develop rather slowly. A greater degree of cardiac hypertrophy is present usually than in the hyperplastic goiter. The blood pressure is often increased. The work of Kendall would seem to show that the thyroxin, produced in the normal gland in exophthalmic or hyperplastic goiter, and in the group of lesions producing cardiovascular goiter, is the same. The difference in symptoms between these two types



4 5 6 7 8

Fig.4. Fetal adenoma. Fig. 5. Adult colloid adenoma. Fig 6, Mixed adenoma. Fig. 7, Adenomatosis. Fig. 8, Compensatory hyperplasia.

of toxic goiter may possibly be due to the difference in the rate of absorption of thyroxin in the two types.

Plummer and Wilson have shown that the time elapsing from the first evidence of parenchymatous goiter until the course has reached its height averages about nine months, while in cardiovascular goiter the time elapsing from the first appearance of the goiter until the height of the disease is reached averages about fourteen years. This means that in the parenchymatous goiter there is a rapid absorption of thyroxin, while in the cardiovascular goiter the absorption is much slower. In poisoning by other toxic substances the symptoms vary very much between the acute manifestations following a rapid administration of the poisonous substance and the chronic manifestations following the slow administration of the poisonous substance, so that by analogy the explanation as stated would appear reasonable. In cardiovascular goiter the basal metabolic rate is an indication of the amount of thyroxin absorbed, regardless of the type of lesion. The curve rises much more slowly and usually does not reach so great a height. As a rule, the cardiovascular goiter is not as severe as the exophthalmic or parenchymatous goiter. However, there are some severe cases.

Adenoma. Three different types of adenoma have been observed. First, the fetal adenoma, in which the acini have no lumen, are lined with spheroidal cells and resemble the acini in fetal life (fig. 4). Second, the colloid or adult adenoma, in which the acini contain colloid material and appear much like the acini in the normal thyroid gland. There is more variation in the size of the acini than in the normal, and there are always some fetal acini present (fig. 5). Third, the mixed adenoma, in which the fetal and colloid acini are about even in number (fig. 6). It is generally stated that there are three different adenomas of the thyroid gland, but it is my personal opinion that there is only one adenoma and that it passes thru the three stages in its development.

Adenomatosis. This is a diffuse growth without capsule, which microscopically resembles the adenomata of the mixed type (fig. 7).

Compensatory hyperplasia. This is a new formation of acini within the old acini as a result of a demand on the part of the system for more thyroxin (fig. 8). It occurs most frequently in cases of colloid goiter, but in pathologic specimens I have seen compensatory hyperplasia in glands, in which there had been a hypothyroidism due to an overdestruction of the parenchyma in the retrogressive stage of hyperlastic goiter.

The adenomas, adenomatosis, and compensatory hyperplasia may or may not produce an oversupply of thyroxin, and hence may or may not produce symptoms. Probably the majority do not show any symptoms at all.

Neoplasms. The most common neoplasms are the adenomas already described. These are usually non-toxic but sometimes are toxic. There are other benign tumors, but I have not had the opportunity of studying them since I obtained the metabolic apparatus. One would not expect them to produce any change in the basal metabolic rate, unless they were so large that they destroyed large portions of the thyroid substance by pressure necrosis.

Malignant neoplasms of the thyroid are not very common. I had one patient with a sarcoma resulting in death. The basal metabolic rate was not altered in this case.

Important as the basal metabolic rate is in thyrotoxicosis, other factors that enter into the making of a diagnosis or determining the type of treatment needed must not be disregarded. There are other lesions that will produce either a rise or fall in the basal metabolic rate, so that a careful study of the case should always be made. The relationship existing between the symptoms and the basal metabolic rate is of great value. Thus, if the basal metabolic rate is higher than the symptoms would indicate, we know that the disease is progressing. On the other hand, if the basal metabolic rate is lower than the symptoms would indicate, we know that the disease is either improving, or else is approaching or is in the state of remission. These conditions are illustrated by the following cases:

First stage:

Case 3082. Referred by Dr. W. D. Lockwood. Male. Age 45. Married. American.

Family history. One brother died from a goiter.

Present complaint. Goiter, pain in abdomen, gets out of breath easily.

History. The patient states that he has had a goiter for some time but that about a month ago it began to increase in size and his heart became rapid. Recently he has been having considerable pain in the epigastrium and a diarrhea. He tires easily, perspires frely, and is irritable.

Physical examination. Patient is five feet seven and one-fourth inches in height and weighs one hundred twenty-two pounds. Pulse 108. Temperature normal.

Head. Slight exophthalmos involving both eyes.

Neck. The thyroid is considerably enlarged, soft, and has a bruit over the entire gland.

Heart. There is a strong impulse in the nipple line, fifth interspace. No murmurs.

Abdomen. Marked tenderness in epigastrium.

Extremities. Palms moist.

Nervous. Fine tremor. Exaggerated reflexes.

X-ray examination of gastrointestinal tract showed hyperperistalsis.

Basal metabolic rate. 100 per cent above the average for a man of his height, weight and age.

Diagnosis. Exophthalmic goiter in the first stage.

Treatment. He was taken to the hospital and on May 15, 1920, both superior thyroid arteries were ligated. On June 15 the basal metabolic rate was 16.4 per cent above the average. June 16 a double partial lobectomy was done. On Aug. 30 the rate was 6 per cent below the average.

Case 2704. Referred by Dr. F. P. Schultze. Female. American. Age 46. Married.

Family history negative.

This patient was first seen Dec. 29, 1919, at which time she gave a history of having had a bloody vaginal discharge almost continuously for the preceding six months. She complained of bearing down pains in the pelvis, frequent headaches, constipation, sleeping poorly, and having lost about fifty pounds in weight.

Examination showed a woman of moderate nourishment. Pulse 96. Blood pressure systolic 175, diastolic 110.

Head. Tonsils moderately enlarged. Pharynx injected.

Neck. Small firm diffuse goiter. No bruit present.

Chest. Apex beat 16 centimeters to the left of the median line, right border of the heart at the right border of the sternum. Systolic murmur at the apex transmitted to the axilla.

Abdomen. Pendulous with diffuse sensitiveness over lower portion.

Genitalia. Uterus moderately enlarged, cervix torn, everted, and contained retention cysts. The slightest manipulation produced bleeding.

Basal metabolic rate 9 per cent above the average for a woman of her height, weight, and age.

Hysterectomy Dec. 30.

Examination of the uterus showed a chronic metritis and endometritis.

Patient was next seen Aug. 30, 1920, at which time she stated that she gained rapidly following the operation and felt better than she had for years. In May the goiter began to enlarge and the heart beat increased in frequency. At this time she noticed that she tired with the slightest exertion.

Examination. Pulse 130. Temperature normal.

Head. Moderate exophtahlmos present in both eyes. Lips blue.

Nec. Thyroid diffusely enlarged. Pulsated. A bruit was to be heard over the entire gland.

Chest. Apex beat has become diffuse since preceding examination and the systolic murmur increased.

Basal metabolic rate 128 per cent above the average for a woman of her height, weight and age.

Patient was sent to the hospital and placed at absolute rest. On Sept. 7 the left superior thyroid pole was ligated. The basal metabolic rate fell to 76 per cent. On Sept. 13 the right superior thyroid pole was ligated. On Oct. 5 the basal metabolic rate was 43.6 per cent above the average. On Oct. 13 it was 55.4 per cent. On Oct. 21 it was 49.7 per cent. A double partial lobectomy was done Oct. 25. The basal metabolic rate then fell to normal, and the patient returned home in fairly good condition.

Stage of remission:

Case 2704. Referred by Dr. J. C. Ghormley. Female. Age 40. Married. American. Patient states that five years ago while pregnant the thyroid gland enlarged, her heart became rapid and she had some difficulty in breathing. Two years ago she had a severe attack. At this time the eyes were prominent. She had a moderately severe attack a few months ago, and there have been several mild attacks.

Present Complaint. Rapid heart, tires easily, soreness between shoulders, constipation, and gas in the stomach and bowels.

Family history negative.

Examination. Patient is undernourished, nervous, and anxious about her condition. Pulse 138 and regular. Skin shows numerous brown pigmented spots.

Head. Eyes prominent with palpebral orifices increased in width. Tonsils show some enlargement.

Neck. Diffuse enlargement of the thyroid gland. The gland is firm.

Chest. Lungs negative. First tone at apex roughened.

Abdomen. Lax. Tenderness in epigastrium and lower right quadrant.

Genitalia. Right broad ligament thickened. Perineum lacerated. Rectocele.

Nervous. Fine tremor. Deep reflexes exaggerated.

Basal metabolic rate 12 per cent below the average.

Diagnosis. Exophthalmic goiter in a stage of remission.

Treatment. Thyroidectomy.

Microscopic examination showed the acini to be filled with colloid material and of about average size. The colloid material was somewhat granular. Rudimentary papillomata were present. The acini were separated into groups by loose connective tissue.

Case 3327. Referred by Dr. Robinson. Female. Age 28. Single. American. Telephone operator. Seen Aug. 30, 1920.

Family history. One maternal aunt had a goiter which later disappeared.

Present complaint. Goiter, rapid heart, nervous, burning in stomach relieved by eating, occasional sore throat.

History. The patient states that she had been nervous about two years. She first noticed the goiter about eight months ago. The heart became rapid at about the same time. She has had some swelling of the legs. The burning in the stomach has been present for years.

Physical examination. Pulse 120, regular. Temperature normal. Respiration normal. Weight 133 pounds. Height five feet three inches. Blood pressure systolic 130, diastolic 78.

Head. Tonsils considerably enlarged, and pus exuded on pressure. No exophthalmos.

Neck. Moderate diffuse enlargement of the thyroid gland with a bruit present.

Heart. Slightly larger than normal. No murmurs.

Nervous. Tremor distinct. Reflexes exaggerated.

Basal metabolic rate 8 per cent below the average.

Treatment. The tonsils were removed Sept. 12, without any aparent beneficial effect upon her goiter. The patient was observed frequently until the first of December. The basal metabolic rate did not go above the average for a woman of her age, height and weight. At times her heart became so rapid that she would have to lie down. On Dec. 6 the goiter was removed.

Microscopic examination showed much hyperplasia and hypertrophy. Some of the acini were distended with secretion, while in other fields the acini were filled with papillomatous masses.

The patient recovered from the operation satisfactorily and is now back at her work in good condition.

The diagnostic and prognostic value of the basal metabolic rate may be summarized as follows: (1) The basal metabolic rate is an indispensable index of the activity of the thyroid gland. (2) An increase in the secretion of thyroxin is followed by an early rise in the rate. This rise occurs before the clinical symptoms are manifest. (3) The height of the basal metabolic rate is not as important as is the course is changing. (4) A rapidly rising rate or a rate is changing; (4) a rapidly rising rate or a rate that is higher than the symptoms would indicate usually means a rapidly secreting thyroid gland and greater severity than is seen with a slowly rising rate or a rate followed closely by the clinical manifestations. Rapid absorption following massage or surgical intervention must be excluded. (5) A stationary rate after a rise usually means that the disease has reached the zenith, but not necessarily so. (6) A falling rate indicates a decrease in the activity of the thyroid gland. The falling rate does not follow the activity of the thyroid gland as closely as does the rising rate, and neither is it followed as closely by the symptoms. (7) The variation between the falling rate and the symptoms is indicative of the intensity of the disease thru which the patient is passing. The more severe the disease, the greater the variation. (8) A normal or subnormal rate after an attack of thyrotoxicosis, accompanied by symptoms of the disease, is indicative of injury produced by the thyroxin. Often the injury is permanent and the symptoms persist for life, altho the patient may recover from the goiter so far as the excess secretion of thyroxin is concerned. (9) A fluctuating rate after an attack of thyrotoxicosis is indicative of pathologic activity in the thyroid gland, and exacerbations of more or less severe grade are to be expected.

Prognosis. With a rising rate a guarded prognosis must always be given. In general, with the first attack, when the rate is below 25 per cent above the average, the disease may be regarded as mild and the prognosis good; between 25 and 50 per cent as moderate; between 50 and 75 per cent as severe; and between 75 and 100 per cent as very severe. The prognosis is grave if the rate is over 100 per cent. A falling rate gives a much better prognosis than a rising rate.

The character of the symptoms must always be considered in conjunction with the rate in determining the prognosis. In subsequent attacks this is even more important than in the primary attack. Often in the presence of permanent lesions it requires but a small amount of thyroxin to produce a serious condition, hence the prognosis may be very grave even with a low rate.

The basal metabolic rate as an indication for treatment. As has been stated before, the basal metabolic rate must never be taken alone, but only in conjunction with the clinical manifestatations. In the onset of the disease, with the rate below 25 per cent, I believe all cases should be treated medically. With a rate between 25 and 50 per cent the rapidity of the development of the disease, together with the relationship existing between the rate and tne symptoms, are important factors. The rapidly developing disease had better be regarded as surgical. In the cases where the disease is advancing slowly and the symptoms are developing as rapidly as the rate medical treatment should be tried. In the developing disease with a rate not over 50 per cent, the radical operation can usually be done without preliminary ligation. In cases seen in an exacerbation or in the regressive state the symptoms of the patient are of great value in determining whether a preliminary ligation is necessary or not. Recurrent cases or cases in an exacerbation are always to be regarded as being surgical cases, altho the operation may sometimes need to be deferred.

With a rate between 50 and 75 per cent I believe it is always best to ligate the superior thyroid arteries and wait for the rate to drop before doing radical work. It is not best to remove the gland with a basal metabolic rate over 50 per cent. With a rate between 75 and 100 per cent radical work should never be done until the superior thyroid arteries have been ligated, and I believe it is best to tie only one artery at a time. It must be remembered that in doing any work upon the thyroid gland the manipulation forces thyroxin into the blood stream. The interval that elapses between the operative procedures upon the gland should be great enough to permit the effect of the thyroxin thus forced into the blood stream to entirely pass away. For this reason the basal metabolic rate should always be observed after a ligation and the next operation not done until the rate has ceased to drop. When the rate is over 100 per cent, if the patient is in a precarious condition at all, no surgical work should be done, but the patient should be put to bed at absolute rest and given sedatives and cardiac stimulants, if indicated. With this procedure the patient will usually improve and the rate drop to where a ligation is safe.

In reading the literature since the development of basal metabolism, one finds reports of cases in which there seems to be much variance between the clinical manifestations and the basal metabolic rate. To this group the term dysthyroidism has been applied. Further, we find reference to many cases that have been operated upon, in which the patients have not received the relief which was expected. I have gone over my cases carefully with these two conditions in mind, and believe that they can be classified as follows:

Dysthyroidism. First, errors on diagnosis. In these cases the patients have symptoms, similar to those of mild hyperthyroidism resulting from the slow absorption of toxine from some process, such as chronic infected tonsils. These patients have some enlargement of the thyroid gland which is not toxic. This enlargement is most frequently colloid goiter, adenoma or adolescent goiter. The basal metabolic rate is found to be within the normal limits. Second, the toxic goiters in the stage of remission. As has already been stated, it has been shown that, after injecting thyroxin intravenously, the patient shows clinical manifestations for a considerable period of time after the basal metabolic rate reaches its former level. The same thing appears in toxic goiter and, if the patient is examined during this time, the symptoms are found to be present but the rate is normal because the patient is not getting an overdose of thyroxin. Third, cases in which permanent lesions have been produced by the thyroxin and thus the symptoms are continued, altho the secretion of the thyroid gland is normal or even subnormal.

Surgical failures. Several cases have been studied that have been operated upon and still have some of the former symptoms. These can be grouped as follows: First, errors in diagnosis. The patient had a non-toxic goiter, the symptoms being produced by some other lesions, as infected tonsils. The removal of the goiter had no influence upon the focus of infection and consequently the patient was not benefited. Second. Insufficient amount of gland removed. One case was seen in which one lobe had been previously removed following an attack of thyrotoxicosis. The patient had another attack of typical toxic goiter with a basal metabolic rate 45 per cent above the average. Third, cases with permanent lesions. In these cases the toxic goiter has run long enough to produce permanent changes in the heart muscle, in the nervous system, behind the eyeball or elsewhere, and, altho the operation may produce a permanent cure so far as thyroid secretions are concerned, the patient will continue to have a defective heart, a protruding eye, tremor or be irritable. The following two cases illustrate this point:

Case 791. Housewife, white, American, married, age 54.

Diagnosis. Cardiovascular goiter.

Complaint. Stomach trouble, loss of weight. joint trouble and palpitation of the heart.

History. At twenty years of age, following birth of triplets, had nervous breakdown, accompanied by tremor of hands and feet and palpitation of the heart. Was infected at time of confinement. Husband and all three babies died within the next three months. Married again at twenty-five. Child, born three years later, lived one year and died of "brain trouble." At thirty-four second nervous breakdown. Patient had sinking spells, rapid heart and indefinite pains. Stomach trouble began at this time. At forty-eight following exposure had severe bronchitis followed with "heart trouble." Had to be propped up in bed four months.

In addition to the above, patient has had la grippe several times and pneumonia when a girl. Menstruation began at twelve. Periods fairly regular until last fall, when the interval, duration and amount of flow increased. Bowels move one to three times daily. Appetite good. Has lost twenty pounds in the last two years.

Family history. First husband died of pulmonary tuberculosis. One sister died of carcinoma of the liver. Father died of valvular lesion at seventy-one. Mother died at seventy-five, cause unknown.

Physical examination. Fairly well nourished woman. Pulse 92, regular. Respiration and temperature normal.

Head and neck. No exophthalmos. Small nodule in the right lobe of the thyroid gland but gland not otherwise enlarged, if anything smaller than normal.

Chest. Lungs negative. Heart dullness extends from the left sternal border 10 cm. Systolic murmur at the apex transmitted to the axilla.

Abdomen. Liver extends two fingers below costal margin. Right kidney palpable.

Vaginal examination negative.

Nervous. Reflexes exaggerated. Tremor present.

X-ray examination of the stomach showed the greater curvature three inches below the iliac crest. Empty in four hours. An Ewald test meal showed a total acidity of ten. No free hydrochloric acid but a trace of lactic present.

Operation Oct. 8, 1916. The right superior thyroid artery was ligated. After a marked reaction, the patient gained somewhat in general condition but continued to lose weight. Nov. 6, the right lobe and isthmus of the thyroid gland were removed under local anesthetic, leaving posterior portion of capsule. There was less reaction than after the primary ligation. The patient gained until the middle of February when the former symptoms began to recur. April 5 under ether anesthesia, the left lobe of the thyroid gland was removed, leaving the posterior capsule. There was but little reaction. The patient gained rapidly. At present she feels the best she has felt for years and has regained her lost weight. On May 25, 1920, the basal metabolic rate was 21 per cent below the average. She still has tremor, tachycardia, and is irritable.

Case 2118. Referred by Dr. E. G. Margason. Female. Age 37. Married. American. Several months previous to examination the family had noticed that the patient was becoming irritable. At the same time the thyroid began to increase in size and the pulse in rapidity. She now complains of being very irritable and nervous, has lost considerable weight and tires upon the slightest exertion. She has palpitation of the heart and is unable to eat because of gastric distress. She sleeps poorly. Other than the foregoing, the history was unimportant.

Family history negative.

Examination. The patient was of fairly large frame with nourishment below normal. The eyes protruded and the face had a restless, irritable, almost maniacal appearance. The thyroid gland showed moderate enlargement, and a bruit was to be heard. The pulse went up to 140 at times and was irregular. The heart was moderately enlarged and a systolic murmur was present. The palms of the hands were moist. A fine tremor was present. The patient at times appeared to be mentally deranged.

Diagnosis. Severe hyperplastic goiter. Basal metabolic rate not determined as I did not have the apparatus at that time.

The patient was sent to the hospital and the superior thyroid arteries ligated under local anesthesia. After the preliminary reaction, the patient showed marked improvement in every way.

Later the gland was all removed except the isthmus and the small amount of tissue that adhered to the posterior capsule. The patient recovered from the operation rapidly and left the hospital in a much improved condition but with symptoms quite pronounced. A year later she was again examined. At this time she weighed 180 pounds. Tremor was present but less pronounced than previously. The heart had decreased in size but was still somewhat larger than normal. A systolic murmur was heard at the apex. Systolic pressure 180, diastolic 110. Both legs showed a slight edema. Exophthalmos present but considerable less than at the time of operation. The patient is still quite irritable. The basal metabolic rate was seven per cent above the average or three per cent below the normal limit.

Conclusions. The patient is no longer hypertoxic, as the basal metabolic rate is three per cent below the upper normal limit. She is suffering from permanent lesions of the nervous and cardiovascular systems, produced by the toxine previous to the operation.

The only death in the series occurred one month after any operative work had been done upon the patient. On the day preceding her death, she was in the best physical condition while under observation.

Case 3456. Female. Age 50. Married. American. Seen Nov. 5, 1921.

Family history negative.

Present complaint. Shortness of breath, loss of strength, rapid heart. The patient gave a history of severe attack of exophthalmic goiter fourteen years before with severe attacks since. The present attack began several weeks before. She had been confined to bed for three weeks. She was delirious at times.

Physical examination showed a much emaciated patient. Pulse 140, temperature normal, respiration 20, skin sallow. Marked exophthalmos. Thyroid gland firm, fairly large and a bruit present over entire gland.

Heart. Impulse 1.5 inches outside the nipple line, at the right border of the sternum. Systolic murmur at apex. The heart was rapid and very irregular.

Extremities. Palms moist.

Nervous. Fine tremor. Exaggerated reflexes.

Diagnosis. Exophthalmic goiter with myocarditis, cardiac dilatation and hypertrophy.

The patient was sent to the hospital in an ambulance. On account of her mental condition the metabolic rate could not be determined. She was placed at absolute rest and by Nov. 23 showed sufficient improvement to permit the ligation of the right superior pole under a local anesthetic. Following this there was considerable reaction, after which she improved steadily, so that her condition permitted the ligation of the left superior pole, Dec. 6. She then gained rapidly, so that she was able to be up and about. Her weight increased sometimes as much as a pound a day, the heart became more regular and the pulse dropped to 110, sometimes being as low as 80. On Jan. 5, she was feeling very well. At 7.30 she walked to the bathroom. At eight o'clock she complained of severe pain and shortness of breath, and at 8.40 she died. Death was due to the heart lesion, produced from the prolonged hyperthyroidism.

Cases belonging to this group show the danger of delay in operating upon patients with thyrotoxicosis. Practically all of these cases of so-called surgical failure would be eliminated, first, if the cases were carefully studied; second, if at operation nearly all of both lobes were removed; and, third, if operated upon before permanent lesions were produced.

In conclusion, I do not want to place undue stress upon the importance of the basal metabolic rate, but I firmly believe that basal metabolic studies should be as routine in the study and treatment of thyroid lesions, as are blood counts in infections. If this were done and the indications for treatment, as shown by a study of the basal metabolic rate in its relationship to the clinical symptoms, were followed, the operative death rate should be as low as that for the ordinary abdominal operation.

NOTES ON A YEAR IN EUROPE

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Having just returned from a year spent in the medical centers of Europe, I have been asked to recount my experiences and observations for the readers of Northwest Medicine, especially for those who contemplate going abroad.

At the outset it must be stated that conditions generally in Europe are not at all favorable for travelers bent on pleasure or work. Europe is suffering severely from a postwar neurosis, and the people generally are staggering under the heavy burden imposed upon them as a result of the war. This applies to all countries, altho the burden differs in each country.

England is groing thru a critical period, caused not only by trouble in her colonial possessions and in Ireland, but grave internal conditions have arisen, largely dependent upon the economic situation in general and the question of unemployment, particularly the unemployment of the ex-service man. France is having her own worries and cares. In the first place she seems determined to crush Germany, thus avoiding the danger of a future war. The unemployment question in France is not serious. Economic conditions generally are good as viewed by the average visitor. Paris is today the brightest and most beautifully kept city in the world. Her boulevards and streets are as smooth and clean as a dance floor. There is more display of wealth in Paris than in any city I have ever visited. More jewels are to be seen in the shop windows along the Rue de la Paix than one sees in the entire of Germany and Austria combined. France is still fighting the war.

On the other hand, Germany is thru fighting the war, altho there still lurks the desire to beat France in the hearts of fifty per cent of the Germans. Industrial Germany is working day and night, and it is the evident intention of German manufacturers to flood the world with their products. There is no unemployment in Germany and the working people are receiving good wages. The working classes are so well organized that, if at any time they decide the wage scale is too low, demands are made which if not promptly complied with, result in a strike. If then the demands are not complied with, a general strike follows which may involve all workers and as a result of which all business is absolutely paralyzed. One never knows in Germany when serious disorders of this sort are liable to break out and, once started, one never knows when they will end. For this reason the moment you enter Germany you feel a sense of insecurity.

Germany and Austria are crowded with foreigners who, taking advantage of the low exchange, have either taken up their residence there where living is cheap or are there for purposes of buying. This is particularly true of visitors from neighboring countries. Residents of these countries are enabled to make the trip to Germany or Austria, living at the best hotels, and purchasing everything they can carry away with them in the way of wearing apparel, and then the sum spent scarcely equals the cost of living in a small country town at home for the same period. For this reason the trains entering and leaving Germany and Austria are packed with travellers and one is rarely able to find a seat.

"The less luggage, the better" should be the axiom in travelling in Europe. There is no free baggage allowance on any European train and, if trunks are carried, not only is a considerable expense incurred, but also an endless amount of trouble and worry. As a matter of fact, your troubles cease only when your baggage has been stolen or lost, for then there will at least be the satisfaction of knowing that you won't have to worry about its being stolen or lost any longer. If your baggage is not stolen, you will be hauled out of your train at all hours of the day or night to undergo customs inspection and the chances are, ten to one, that your baggage will be torn pretty well to pieces in the search for tobacco, liquors, gold or silver.

The cost of living in Europe varies enormously in the different countries and is, of course, due to the value of the dollar as compared with the respective national currency. Generally speaking, living is much more expensive in the large cities. The cost of living in Paris equals that of living in New York. In the so-called "hotels de luxe" one must pay two hundred francs ($16.00) per day for a double room with bath; in first class hotels, one hundred francs ($8.00); and in second class hotels seventy-five francs ($6.00). The cost of food in the best restaurants equals tha tof the restaurants of New York, but there are hundreds of small restaurants, known to the Frenchman and not frequented by Americans, where one can secure excellent food at very moderate prices. At the residence hotels, one can secure room and board by the month for two persons for $6.00 to $8.00 per day, and there are hundreds of second class residence hotels, where one can secure board and room at much more moderate prices.

Vienna, formerly one of the most beautiful cities in the world, and once the mecca for those wishing a post-graduate medical education, is now dreary and desolate in appearance. The city has suffered bitterly from eight years of neglect. The people of Vienna are very poor, and their worn clothes have been patched so many times that little of the original material remains. The sight of so many scantily clad, shivering human beings trudging along the crowded streets was so depressing that I could scarcely bring myself to remain in the city. My first thought was to get away from the sight of so much misery, but after a few days I found myself like all other visitors, more or less reconciled to the conditions. Yet, with all their poverty and suffering, the Austrian people are cheerful and hopeful. They seldom discuss the war, but when they do, they make it clearly evident that they feel Germany brought about their downfall and then deserted them. The former Austrian Empire has been so reduced in square miles that little of the former monarchy exists. Before the war Austria had a population of 45,000,000. At present the Austrian Republic contains about 6,000,000 inhabitants, one-fourth of whom live in Vienna. The country possesses absolutely no natural resources. Seven-eighths of the present Republic is unproductive mountainous country, and the remaining one-eighth, altho under cultivation, does not provide enough vegetables for its inhabitants. Austria must import all raw materials for manufacturing purposes. Nearly all of her food and all of her fuel comes from outside sources.

For one hundred dollars in Austria, one can secure enough paper money to fill all his pockets. The value of the American dollar can be appreciated when we realize that, for instance, a bank clerk receives the equivalent of one hundred dollars a year in our money. A University professor, after twenty years in teaching, receives about forty dollars a year. A shoemaker receives sixty dollars a year, skilled laborers, thirty cents a day, and house maids two to three dollars a month. The medical profession of Germany and Austria has been very hard hit by the war. Some of those men who were rated as millionaires have been reduced to poverty because their funds were invested in securities which have so depreciated in value that they are now worthless. The most prominent internist in Vienna receives the equivalent of fifteen cents for outside consultations. Prominent internists, working the entire afternoon in their offices, at the end of the day have earned three or four dollars in our money. Hospital physicians receive less money than a scrub-woman.

I was not long in locating my old friends and teachers after I arrived in Vienna and everywhere I was received with prewar courtesy. Postgraduate medical work for many years has been in charge of the American Medical Association of Vienna. The work of this Association was virtually suspended with the advent of the war. The Association has recently reopened their headquarters in the old Cafe Clinic just across the street from the Pathological Institute. Dr. Gustav Baar, formerly of Portland, is now President of the Association. Up to 1914 there were usually about four hundred American physicians working in Vienna. At the present time there are about forty and of this number fully seventy-five percent are of German ancestry. I have spent much time in Vienna during the past twelve years, and I feel that we will never live to see the day when Vienna will occupy her prewar position as a medical center.

At the present time the Austrians are making a strong bid for Americans. They are extremely anxious to have us pursue our work as before, but one can readily understand the motive when one learns that the teaching profession of Vienna are charging Americans anywhere from four to ten times as much as is being paid by other foreigners. For many months the American Medical Association, of Vienna, has been having a dispute with the Docent Verein regarding a schedule of fees. The Americans claim that they are being robbed by the Austrians. As a member of a committee appointed to investigate the situation, I learned that the Americans are paying exorbitant fees for work and are actually being held up. I have already stated that a University professor, after twenty years' service receives but 240,000 kronen ($40.00) per year for teaching. The average medical man in Vienna receives two hundred kronen, about four cents, for a visit and even the professors receive but one thousand kronen, (fifteen cents) for an outside consultation. Yet a young assistant in one of the prominent nose and throat clinics, who is yet in his early thirties, and who has had but two and a half year's experience, demands 45,000 kronen for two hours work teaching Americans, which sum is sufficient to provide himself with board and lodging at the best residential hotel in Vienna for ten days. Thus this young assistant receives for two hours work more than a University professor receives teaching his Austrian students for two months.

When the Americans first resumed their work in Vienna, the Austrians were so glad to teach them that they accepted fees in proportion to those which were being paid by other foreigners. But just as soon the Americans again began to migrate to Vienna, the Austrians immediately raised their prices. Not only are the Americans being charged excessive fees, but the method of instruction is far inferior to what is was in prewar days. The hospitals of Vienna are desperately poor, and I was greatly disappointed in the methods of teaching. It is quite apparent that the teaching profession have lost much interest in their work.

Conditions are so uncertain in Vienna that it is almost impossible for one to concentrate his thoughts upon serious work. One never knows at what moment the Republic will be overthrown by a revolution. Rumors are constantly in the air and on Dec. 7 there occurred the worst riot in the history of Austria. At this time the rioters attacked all the large hotels, smashing practically everything that they could get their fingers upon. Not only were the hotels damaged, but the hotel guests were robbed. Practically every glass window in the inner city was smashed. The trouble started as a peaceful demonstration against the removal of the food subsidy, but communist organizers got mixed up in the crowd and, while the police were trying to maintain order, the crowd dispersed and met at prearranged points. From my hotel window I could see them dragging passengers from taxicabs and limousines, taking possession of the cars, tearing the outer clothes off the occupants and kicking, stoning and clubbing all well-dressed persons. The police succeeded in quelling the first disturbance and dispersed the mob. Half an hour later, I heard further disturbance in the street and looking out I saw a seething mass of the toughest looking people I have ever seen. They were armed with clubs and iron bars and, gazing up at the hotel windows, were shaking their fists at the occupants who were looking out. The hotel employes rushed thru the halls warning the occupants to stay away from the windows. In a moment I heard screaming, yelling, howling and jeering, followed by the smashing of windows, doors and furniture. I knew the mob had already entered the hotel in which we were living. It was not long before the first and second floors were wrecked and the mob had advanced to within one door of my own room on either side. After a few attempts to smash in my door they suddenly disappeared. After a few moments I went into the hall and found the first three floors looking as if they had been struck by a cyclone. Not a single piece of glass, article of furniture or door remained intact. The guests' wearing apparel had been scattered all over the floors and much of it had been thrown from the windows into the street. Following this riot a daily recurrence of the disturbances was expected. As a matter of fact I never knew when I left my hotel in the morning whether it would be on earth when I returned, as the rioters had threatened to blow up every hotel occupied by foreigners.

In spite of these disquieting rumors, I remained in Vienna until Christmas. In the meantime conditions had become almost unbearable. It was practically impossible to get about without being subjected to the sneering stares of the Austrian people. One felt uncomfortable riding in a street car. Taxicabs were difficult, if not impossible to get, and taxidrivers compelled their patrons to pay two hundred times the taximeter reading. The drivers of horse-drawn vehicles have long since thrown away their taximeters, and charge as they see fit. Americans and other foreigners are not welcome in Vienna at the present time. The Austrian people believe that the foreigners are there only because of cheap living and that, by being able to spend large sums of money, they not only deprive the Austrian people of what rightly belongs to them, but, furthermore, that they encourage tradesmen to elevate prices. If one walks down the principal streets of Vienna, he will see the woman of the street clad in luxurious furs provided by some wealthy foreigner, whereas the honest working people and shop employes have scarcely enough to cover their bodies. There are more cabarets in Vienna than there are in Paris. There are as many banks as there were saloons in an Alaskan mining town twenty years ago. Prices are ridiculously cheap for foreigners.

In Vienna I had occasion to observe the work of a man who had contributed extensively to the German literature on the subject of tuberculosis. It was my pleasure to work with this man in the years gone by and I have always regarded him as the keenest physical diagnostician I have ever known. I was with him daily for two months on this last trip, and I find that, like the majority of other men, his work is far below its former standard.

While in Berlin I visited another of my old friends, a man who is internationally known and the author of many text-books. Before the war he possessed 400,000 German marks, the equivalent of $100,000. Today his securities are worth about $1500. He was called early into the service and he, as well as the entire family, suffered bitterly from malnutrition. His he, himself lost one-fourth of his body weight. the husband lost one-fourth of his body weight. His practice before the war was drawn largely from persons of the better official class, now reduced to poverty so that this physician was obliged to take up industrial insurance work. He is now physician to a large Kranken Kassa, which work occupies his entire time. The Kranken Kassa patients pay eight marks a month, (four cents), and they are entitled to visit the doctor as often as they wish. One thousand patients will pay about forty dollars a month. This physician told me that his income is now two hundred dollars a year. I was also told that one of the biggest surgeons in Germany earns about $5,000.00 a year, which is an enormous income. In speaking of a prominent internist in Berlin, my friend told me that he had an "enormous practice" with a "big income." I inquired what his income was, and was told that it amounted to 300,000 marks annually, at the present time a little more than $1,000.

At Frankfort I visited the Ehrlich Institute with a group of medical officers from Coblenz. Professor Kolle, who succeeded Ehrlich, is a rabid pro-German and monarchist. His tendency to discuss the war is a joke among his associates who only smile when he makes caustic remarks about the French and English.

The Ehrlich Institute is working on three great subjects: tuberculosis, syphilis and cancer. In tuberculosis, they are studying the influence of chemotherapeutic agents. Kolle believes that, if a specific is found, it will be of a chemical nature. In syphilis they are now experimenting with preparation number 1917. This will soon be marketed. It is more stable and less toxic than any preparation used hitherto and comes in liquid form ready for injection. The new preparation must not be confused with silver salvarsan which is entirely different. Kolle has succeeded in securing remarkable results in the treatment of cancer in rats by the use of chemicals. In justice to Professor Kolle it is only fair to state that he was exceptionally courteous to us, and he exerted himself in every possible way to make our visit interesting. His tendency to discuss the war is not to be taken seriously by any visitor.

I spent considerable time in the American Army of Occupation zone. Most interesting to me was the venereal question in this area. At that time there were 12,000 American troops in the area, among whom were 1200 cases of lues. The station hospital in Coblenz, probably the largest G. U. clinic in the world, they administer from 250 to 350 silver salvarsan injections daily. The clinic is housed in one large barrack-like building, arranged after our Camp Lewis plan for physical examinations. The soldier in passing thru the "mill" receives a body inspection, his blood is taken for the Wassermann test, urethral irrigations are given, mercury and salvarsan administered, and the various urine tests are performed, as the soldier passes from station to station.

The question of prostitution in the army zone is one which has been handled efficiently by the medical authorities. Every woman in the zone, irrespective of social status, is provided with an identification card, and may be requested at any time to show this card to the American M.P.'s. If found without her card or a written permission to enter the zone, if suspected of soliciting, she is arrested, tried and if convicted, is examined. If diseased, she is held in a detention prison until she is either cured, if suffering from gonorrhea, or has had five negative smears after the provocative test. For the provocative test they are using sterile milk, hypodermically injected into the subctuaneous tissues, which causes a shedding of the gonococcus from the infected glands or tissues. The gonococcoi can then easily be found on a smear. Luetics were not discharged until they had had many courses of treatment and the blood was negative.

If the woman is convicted of soliciting and is found not to be diseased, she is given from three to six months in jail. In one place which I visited, there were over two hundred and fifty girls in detention.

It has always been my desire to work in the French clinics in order to compare their methods of teaching and standards of diagnosis with our own, and with those of the Germans and British. With this end in view I obtained a scholarship in the University of Paris, which permitted me to enter a special course on tuberculosis which is given annually to French physicians under the auspices of the Rockefeller Foundation. This work permitted me to visit sixteen different hospitals and kept me busy from morning till night. As a whole the work was disappointing, inasmuch as no really new ideas were brought out. I was not favorably impressed with the

French method of teaching in postgraduate work. The French devote a great deal of time to history taking which is very important and commendable. I know of no country wherein so much emphasis is placed upon this element of diagnosis. The methods of physical examination seemed to me very superficial. This applies particularly to the examination of the chest. My work enabled me to see the work of some of the best and most prominent French internists. In not a single instance did I see the lower lung excursion or the apical isthmus percussed. The percussion of the chest in general was not carried out in accordance with the principles of refined technic. The French are lamentably weak in laboratory work. Nowhere in any French hospital did I see the exhaustive procedures carried out as is done in American clinics.

Unfortunately there is no well organized scheme for postgraduate instruction in Paris and one loses a tremendous amount of time in his search for suitable work. The French are extremely courteous to American doctors and are glad to have them visit their clinics. France hopes to become an important medical teaching center, but I am convinced that this will require some time. In order to work successfully in France, especially in medicine, it is necessary to know French. During the entire period I worked in Paris I met but few foreign English speaking physicians. In the special work which I pursued there I met but one French professor who spoke English.

As a delegate from the United States to the International Tuberculosis Union, I was obliged to spend considerable time in London, which gave me an excellent opportunity to make a survey of the London hospitals. I have never been favorably impressed with the British method of teaching medicine, especially as it is carried out in the large London hospitals. Those of you who have done postgraduate work in London recall the time lost in going from hospital to hospital and the lack of system in providing postgraduate instruction. There has been established in London a so-called Postgraduate Association. For the payment of a small fee one is now entitled to visit any of the large hospitals and regularly attend clinics and operations. A weekly program of medical and surgical clinics and demonstrations is published. Thus one has no difficulty in determining at a glance just what is going on during the week. A list of operations and operators is published daily at the headquarters. How well the plan will work remains to be seen.

The antituberculosis movement in England came to a standstill at the onset of the Great War. Fortunately the work was so well organized that today every borough in the city of London and every city and town in England, Scotland and Wales has its tuberculosis dispensary. In London there are several thousand beds available for tuberculosis patients. I spent considerable time at the Brompton Chest Hospital, for sixty years one the most famous tuberculosis hospitals in the world. At the present time the medical officers of the Brompton Hospital are having considerable difficulty with the medical officers of the London County Council who, by the way, control nearly all the beds in London hospitals and decide what disposition shall be made of patients. The present trouble arose because of the difference of opinion concerning what constitutes clinical tuberculosis. The complaint of the Brompton Hospital physicians is that, after they have carefully studied their cases the London County Council Medical Officers, by merely examining the records of the case, and not even putting a finger upon the patient, often reverse the diagnosis and disregard their recommendations.

England is well provided with sanatoria for all classes of tuberculosis case. I found the British National Tuberculosis Headquarters occupying a ten by ten room and in charge of a stenographer. The National Tuberculosis Association of America, with its headquarters in New York, occupies the entire floor of a large building and has a staff of approximately two hundred.

Group medicine is unknown in London. The Harley Street physicians have not the elaborate equipment seen in the offices of American physicians, even those practicing in small towns. Few London physicians own their own x-ray plants. As a matter of fact, they practice a type of medicine common in the United States fifteen years ago.

From England I visited Scotland and spent some time with Sir Robert Phillip, at Edinburgh, who is the father of the tuberculosis dispensary. Sir Robert established the first tuberculosis dispensary nearly forty years ago. The antituberculosis work in Edinburgh has been very progressive.

From Scotland I visited many of the sanatoria located along the Fjords of Norway. The climate of the west coast of Norway is cold and damp. The sun seldom shines in winter and not much even in summer. The winters are long and the days are very short; yet the results obtained in these institutions are as good as those obtained in many of the resorts high up in the Alps. This is also true of the sanatoria in England and Scotland.

The course of my travels finally led me to Denmark, where I visited Professor Saugman, at the Vjlefjord Sanatorium. I found that he is doing excellent work in his well equipped sanatorium, and is obtaining especially remarkable results in the treatment of tuberculosis by use of artificial pneumothorax and by resorting to surgical procedures in selected cases.

At Pavia, Italy, I visited the old Forlanini Clinic. Professor Forlanini was the first man in the world to employ artificial pneumothorax in the treatment of tuberculosis of the lungs. Altho he died several years ago, his work is being carried on by Professor Morelli in a most pleasing manner.

One of the principal objects of my visit to Europe was to investigate the present status of pneumothorax work and thoracic surgery. I find that pneumothorax work is being extensively carried out and excellent results are being obtained, particularly by Braur in Hamburg, Sauerbrook in Munich, Friedrich in Vienna, Rist in Paris, Morrison Davis in England and Neuman and Spengler in Davos Platz, Switzerland.

In conclusion, it is my opinion that it is no longer necessary for Americans to go abroad for postgraduate work in general medicine. America is undoubtedly becoming the medical center of the world. If any of my colleagues are suffering from restlessness or discontent and are anxious for excitement and adventure I know no better cure than a trip abroad at the present time.

THE PREPARATION OF THE CANCER PATIENT FOR OPERATION*

D. T. Quigley, M.D.
OMAHA, NEB.

For the purpose of treatment patients cancer may be divided into three clases: those which are small and local and accessible, those which are too large to ray successfully or are inaccessible, without surgery, and those which have formed metastases. The first class may be illustrated by epitheliomas on the eyelids, lips, around the nose, on the face, on the back of the hand, etc. These are all curable with radium and the patient is much better off if no surgery is done, provided the lesion is small and localized. In the second class we should include cancer of the breast, of the stomach, of the bladder and rectum and moderately advanced cases of the mouth involving bone. In the third class, we should include any of the localities mentioned but advanced to such a degree that metastasis is plainly apparent.

It is pretty generally conceded that radium is the treatment of choice in the first class mentioned, but it has also been pretty generally held by surgeons that cases of the second or third class belong to surgery alone, and should have nothing to do with ray treatment. I believe this is a mistake, for just as surely as the ray treatment cures the small lesion, just so surely will it aid and assist the surgeon in his attack on the larger area of disease.

Our older conception of cancer was that of a solid organized mass of tissue, growing in a wild lawless manner. It was only thought of as a solid mass. Every operative procedure was devised with the idea of getting rid of more and more tissue, going further and further away from the cancer bearing field. The surgeon believed that, if he removed every bit of the solid cancer mass, the patient would be cured. Operations were multiplied and many pages of medical journals were wasted in describing new tricks of technic, but cancer recurred after operation in just about the same proportion of cases, and that proportion was so high that the laity has almost lost confidence in the medical profession and the knife is in disrepute, while

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* Read before the Twenty-Seventh Annual Meeting of Utah State Medical Association, Salt Lake City, Utah, Sept. 13-15, 1921.

quackery flourishes to an almost inconceivable degree in the field of cancer.

The mistakes which have been made in the past in dealing with cancer have been made because medical men have not understood the nature of the disease with which they were dealing, and have not understood the basic sciences involved, such as physiology, anatomy, histology and pathology. Our mistakes have been mistakes of ignorance.

Cancer should not be considered as a foreign substance in the flesh as a stick or a stone, to be simply removed and have done with. It is a much more complex proposition. It has anatomy, physiology and pathology. It is eagerly growing and, in addition to a solid mass of cells, it has fluids. These fluids are blood and lymph. No life processes can go on without blood bringing in food and waste matter being carried away by the lymph. The cancer cells are growing eagerly in every direction, seeking the lines of least resistance; the walls of the lymph vessels are very thin; they are invaded; every living animal moves and receives injuries. Cancer tissue is very friable, the movement or the raumatism causing small particles of the friable cancer tissue to become disengaged from the parent mass. They float in the lymph stream. Such a particle is a totally disengaged and unconnected thing. It has no blood vessels or nerve connections. The fluid in the cancer mass probably holds millions of such particles, the individual bulk being anywhere from one cell up. This fluid has been called cancer juice. Some of these particles established themselves in lymphatic glands, having filtered out of the lymph stream, and there set up new cancer foci. Cancer cells are then transplantable, and not only are they transplantable, but transplantation is the only way in which cancer gets from one part of the body to another. Our cancer area, then, is a growing mass of cells which contains cancer juice, which holds in suspension millions of transplantable cancer cells.

Taking this viewpoint, then, cancer is a thing to be approached and handled with the greatest respect and the greatest gentleness. The patient who comes to us for examination for suspected cancer should be treated as gently as tho the condition were a boil on the end of the nose. A rough examination or many repeated examinations may easily put a patient from the curable into the incurable class. I believe this often happens in breast and uterus cases. In the operation itself, as most operations are done, there is enough rough handling and traumatism to assure recurrence from cancer juice being squeezed out of the cancer mass into the surrounding tissues. Add to this the transplantion back into the operation field of cancer cells from contaminated fingers or instruments, and the wonder is not that we get so many recurrences, but that any escape without recurrence. The most potent causes of bad results in the surgery of cancer, then, are traumatism and transplantation. We can avoid the bad results of traumatism by gentleness in examinations and in operating. What can be done to prevent transplantation?

It has been found by work on animals that cancer cells that have been previously rayed with radium or x-ray lose the power of transplantation and regeneration, altho the dose may not be sufficient to kill out the malignant cell. This knowledge has a very practical bearing on the question, and within a few years we should show a much smaller percentage of recurrences in cases properly rayed before operation. In my own experience the results have been most striking in cancer cases, involving the mucous membrane of the mouth and the bones of the jaws. These cases have been rayed thoroly with radium, and after six to twelve weeks operation is done. Some of the cases have gone over two years and recurrence has not taken place in any case so treated. All accessible cases involving mucous membrane should be rayed with radium. Stomach and breast cases should be treated with x-ray. Cases of the third class involving glands should be thoroly rayed before operation is attempted.

The action of the rays is probably largely on the disengaged floating cancer cells which, having no connections, kill out easily but which would implant and grow more easily and more surely in a wound scar than in a gland, where the defense on the part of the organism is highly developed. The principle involved is simply that of carrying sterilization a little deeper.

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EDITORIAL

THE PHYSICIAN AND THE OPTOMETRIST

Should there be any relation between the general profession and the optician? Yes and no. Yes, in only one respect, for the mechanical work of finishing lenses and fitting frames but absolutely no further. No, as regards any relation of the physician to the prescribing optician. This word is final, and it is again time that the medical profession be warned against the attempts of the prescribing optician to secure consultations on equal terms with the doctor. This dictum and this warning are inspired by an article in the *Medical Sentinel,* of Portland, of February, 1922, in which the editor takes the stand that "The measurement of the refraction and muscular state of the eye is a limited specialty. It is the work of the optometrist or refractionist and not of the pathologist. Refractive errors are physiologic not pathologic. The optometrist is therefore in a position to cooperate with the physician in a very efficient and satisfactory way."

These statements are manifestly false. In the first place, there are but few men, uneducated in the general diagnostic science of medicine, who are able to even get the exact rule of thumb measurements of refraction as accurately as can the ophthalmologist. In the second place, it is seldom that the full measurement of the ametropia should be prescribed. It must be varied to suit not only the eye itself, but the condition of health and of work that the person is doing who needs glasses, if only in order to see better. There is not one person in ten who feel the need of glasses who does not have some eye disease or general affection which could be discovered by a professional examination, and which in most cases is amenable to treatment with the result of saving sight, bettering the health and preserving the life.

Certainly the clerks in the stores who call themselves opticians have not sufficient knowledge to take care of such important conditions. It is true that a large proportion of people first try the optician without first going to an oculist, and we believe that the optician may be permitted to prescribe glasses to those people to whom they directly apply in simple cases, where to the layman there is no evidence of disease. The better class of opticians refer any cases in which there is evidence of disease to an ophthalmologist for further examination and, so far as the prescribing of glasses go, the patient invariably finds out that its cost him less. The very idea of physicians referring what is really medical work to non-medical men is repugnant, impractical and to the disadvantage of the patient. Let us hope that none of them will follow such maladvice as given by the editor of the *Medical Sentinel.* H. V. W.

THE UNIVERSITY OF WASHINGTON EXTENSION COURSE

The program for the Graduate Medical Lectureship, at the University of Washington, the coming summer is now complete with the following list of lecturers: In surgery, Dr. John B. Deaver, Professor of Surgery in the University of Pennsylvania; in internal medicine, Dr. Hobart Amory Hare, Professor of Therapeutics and Diagnosis in Jefferson Medical College; in pediatrics, Dr. William McKim Marriott, Professor of Pediatrics in Washington University, St. Louis. These men will each give one lecture daily for five days. In addition to these lecturers the committee has provided evening lectures by Dr. Walter B. Cannon, Professor of Physiology in the Harvard Medical School, on "Recent Developments in Our Knowledge of Schock," and by Dr. William Engelbach, from St. Louis University, on "Diagnosis of Disorders of the Ductless Glands."

The course is to be given during the week, beginning July 17. There will be lectures each day at 9 and 10.30 a.m. and 12.45 p.m. The additional lectures will be given Tuesday and Thursday evenings. The annual dinner, which has usually been given on Wednesday evening, will this year be scheduled for Monday evening, in order that the men attending the course may have an early opportunity to become personally acquainted with the lecturers. The luncheons at the University Commons will be included in the price of the ticket. The tickets remain at the same price as the last two years, fifteen dollars, and they may be obtained now at the University office of the Extension Service.

The Graduate Medical Lectureship is now in its sixth year and, because of the success of its work and the contacts that have been made with leading medical teachers and clinicians, its value is recognized all over the country. The unique and interesting plan of cooperation between the University, the local and state medical societies, and the physicians and surgeons of the Northwest, which has made this course possible, has attracted very favorable attention. The scope of the course has been widened year by year and this year the program is richer than ever before.

PACIFIC NORTHWEST MEDICAL ASSOCIATION

Herewith is presented the completed program for the meeting at Spokane, July 6-8. A one and a one-half fare on the certificate plan has been secured on all railroads except the Canadian Pacific. It is necessary for everyone attending the meeting to get a receipt on payment of his fare to Spokane, in order to get the one-half return fare. Do not forget this.

PROGRAM

Dr. Henry A. Christian, Hersey Professor of Physic, Harvard Medical School.

1. Certain Phases of the Nephritis Problem.
Discussion opened by Dr. T. H. Coffen, Portland; Dr. W. S. Griswold, Seattle.
2. Treatment of Chronic Heart Disease with Aricular Fibrillation.
Discussion opened by Dr. N. W. Jones, Portland; Dr. G. A. Dowling, Seattle.
3. Clinic, Demonstration and Discussion of Selected Cases: (a) Pernicious Anemia, (b) Alkaptonuria and Orthostatic Albuminuria, (c) Other cases that may be available.

Dr. Joseph C. Bloodgood, Professor of Surgery, Johns Hopkins Medical School.

1. Tumors of Breast.
Discussion opened by Dr. R. C. Coffey, Portland; Dr. A. S. Monro, Vancouver, B.C.; Dr. John Dunlop, Los Angeles; Dr. A. R. Kilgore, San Francisco.
2. Tumors of Bone.
Discussion opened by Dr. P. W. Willis, Seattle; Dr. T. C. Witherspoon, Butte, Mont.; Dr. N. A. Cary, Oakland, Cal.
3. Cancer of Mouth.
Discussion opened by Dr. J. B. Eagleson, Seattle; Dr. A. E. Rockey, Portland.

Public lecture, title not announced, on some phase of the cancer problem.

Dr. Walter B. Cannon, Professor of Physiology at Harvard University Medical School.

1. Recent Evidence as to the Nature of Wound Shock.
Discussion opened by Dr. G. E. Burgett, University of Oregon Medical School, Portland.
2. Bodily Changes Produced by Profound Emotional States.
Discussion opened by Dr. Wm. House, Portland; Dr. D. A. Nicholson, Seattle.
3. New Evidence Regarding the Nervous Control of the Thyroid Gland.
Discussion opened by Dr. John Hunt, Seattle.

Public lecture on "Practical Benefits which have Come from Animal Experimentation." This lecture will probably be given in an auditorium detached from our meeting.

Dr. Frank Billings, Representative of the American Medical Association.

1. Present Day Problems of Medical Practice.
2. Clinic, Demonstration and Discussion of selected cases of Arthritis.

Dr. R. T. Woodyatt, Otho Sprague Memorial Institute for Clinical Research.

1. Diet Adjustment in Diabetes.
Discussion opened by Dr. I. C. Brille, Portland; Dr. Henry Christian, Boston, Mass.
2. Management of Acidosis.
Discussion opened by Dr. C. E. Sears, Portland; Dr. E. P. Fick, Seattle.
3. The Nature of Fever.
Discussion opened by Dr. A. D. Dunn, Omaha, Neb.; Dr. Kenelm Winslow, Seattle.

Dr. Alfred W. Adson, Mayo Clinic.

1. Surgery as a Therapeutic Agent in the Treatment of Neurological Lesions.
Discussion opened by Dr. Laurence Selling, Portland; Dr. T. M. Joyce, Portland.

Dr. Wm. Engelbach, Professor of Medicine at St. Louis University Medical School:

1. Diagnosis of Disorders of the Ductless Glands. (Stereopticon Demonstration of the Gross Hormonic Signs).
Discussion opened by Dr. J. M. Blackford, Seattle; Dr. E. E. Laubaugh, Boise.

Dr. John Butler, Associate Professor of Dermatology and Syphilology, University of Minnesota Medical School.

1. Diagnosis, Pathology and Treatment of Skin Lesions Associated with Systemtic Disturbances. Lantern Slide Demonstrations.
Discussion opened by Dr. J. C. E. King, Portland; Dr. W. L. Rich, Salt Lake City.

Dr. Louis J. Hirschman, Professor of Proctology, Detroit College of Medicine and Surgery.

1. Local Anesthesia in Proctology.
Discussion opened by Dr. G. M. Horton, Seattle; Dr. E. M. Larson, Great Falls, Mont.

7.45 a.m., Friday Morning, Operative Clinic, Sacred Heart Hospital.

7.45 a.m., Saturday Morning, Operative Clinic, Sacred Heart Hospital.

Dr. Arthur D. Dunn, Professor of Medicine, Creighton University Medical School.

1. Some of the Problems Involved in the Lyon-Meltzer Method of Biliary Drainage.
Discussion opened by Dr. J. E. Else, Portland; Dr. R. T. Woodyatt, Chicago.

Dr. Wallace I. Terry, Professor of Surgery, University of California Medical School.

1. Surgical Consideration of Goiter.
Discussion opened by Dr. J. E. Else, Portland; Dr. H. R. Storrs, Vancouver, B.C.

Dr. Frank E. Sampson, Creston, Iowa.

1. The Distribution and Delivery of Medical Service.

Public Lecture, "Conserving Our Community Capital."

THE SIR THOMAS LEWIS LECTURES

These lectures, which will be delivered by Sir Thomas in Portland, May 15-19, will be of great value to all practitioners interested in the consideration and treatment of diseases of the heart. In preparation for the lectures Sir Thomas has suggested that these references be consulted, of his own and kindred papers: The Oliver Sharpley Lectures, *British Medical Journal,* April 16 and 23, 1921; Oct. 1, 1921; Nov. 25, 1910. Heart, Vol. IV., page 33. The profession of the Northwest is invited to be present at these lectures, for which a fee is not charged.

NEW ADVERTISEMENTS

Attention is called to the following new advertisements appearing for the first time in this issue and that of last month, which are commended to the profession: "The Crowning Edition" of The Physician Himself (page 4) is the latest edition of this famous book by Dr. Cathell. The Porro Biological Laboratories of Tacoma (page 129) are approved by the physicians of that city and maintained by an able staff. The Tycos thermometer (page 6) is a product of the well known Taylor Instrument Companies. The Physiatric Institute (page 20) offers courses of study for summer months.

MEDICAL NOTES

OREGON

Report of Veneral Diseases Required. According to Dr. David M. Robinson, of the U. S. Health Board, who is at present in Portland, a rigid campaign is to be conducted against physicians who fail to report cases of venereal diseases. This official is cooperating with the City Health Board in an effort to enforce this rule. All physicians must report cases to the health office by number. If the patient refuses treatment the City Health Officer is authorized to place him under strict quarantine.

A Long Life of Practice. Dr. S. E. Josephi, of Portland, has practiced in that city for forty-five years. This is the longest time in period of practice of any physician of that city, where he has resided for more than fifty years. He is still in active practice and going as strong as ever. During all these years he has participated in many lines of activity beside the practice of medicine, holding public offices as well as a long period of service in the medical school. The doctor is to be congratulated upon his past and present achievements.

Broken Leg. Dr. J. P. Sharp, of Tillamook, was riding in a car driven by another man last month, which collided with a jitney. The doctor sustained a broken leg and injuries to the head.

Owner of Blooded Dog. Dr. A. G. Prill, of Scio, has come into possession of a German police dog, the first to be brought into Oregon. These dogs are a cross between the German shepherd dog, the wolf hound and the blood hound. They are known all over the world as the "dogs with human brains."

Elected Health Officer. Dr. Nellie S. Vernon, of Astoria, was last month reelected City and County Health Officer, this being her fifth year in that capacity.

Will Serve in Europe. Dr. William D. Nichelsen, of Hood River, has sailed for Europe for service in the famine stricken area.

Jury Upholds Doctor. In the suit against Dr. Frank S. Boyden, of Pocatella, last month, the jury gave a verdict in favor of the doctor. He was sued for $25,000 damages for the performanc of a Cesarean section. The jury was out only a few minutes.

Medical Wedding. Dr. L. A. Stevens, of Dallas, was married last month to Miss Martha Richardson, of Portland.

WASHINGTON

Schools Closed for Vaccination. Last month the Department of Health of Tacoma, had a real scrap with the antivaccinationists on the subject of vaccinating school children. The outcome was that City Health Officer Kane closed the public schools for eighteen days because of the refusal to have their children vaccinated. The antis held numerous meetings, in which the advocates did a great deal of talking. Their public speakers consisted of numerous drugless healers and other kinds of "doctors." All these efforts did not prevent the closing of the schools during the period of vaccination quarantine.

Death Rate Decreased. According to the report of Dr. Turner, Director of Health, there were 5,550 deaths from communicable disease in the state in 1921, as compared with 7,374 from the same causes in 1920. A real epidemic of infantile paralysis existed last year. There were 126 deaths from this cause compared with six the previous year. A notable decrease was noted in influenza, the relative figures being 156 and 1,207, and in pulmonary tuberculosis, the figures being 902 and 1,079.

New Orthopedic Hospital. The executors of the estate of the late John A. Finch, of Spokane, recently announced their intention of endowing a children's orthopedic and children's general hospital at a cost of $100,000 each. The orthopedic was to be under the auspices of the Mystic Shrine, provided the name Finch was attached to it. The Shrine declined to accept the offer under these circumstances. It is now reported that a $250,000 Shrine orthopedic hospital is assured for that city during 1923, with annual maintenance of $50,000 in perpetuity.

Hospital To Be Opened Next Month. The renovated government hospital at Walla Walla will be officially opened on May 12, National Hospital Day. A year ago the entire reservation, including some sixty buildings, many in a very bad state of repair, was turned into the U. S. Public Health Service to be devoted to the welfare of disabled veterans. The new hospital will be up-to-date in every way.

Opposed to Postmaster General. The anti-vacciinationists, of Tacoma, recently held a mass meeting in which they protested against the appointment of Dr. Hubert Work as Postmaster General. The resolution setting forth why the doctor was not acceptable to the league was sent to President Harding and U. S. Senators.

Chelan County Medical Society elected the following officers for the ensuing year at a recent meeting of the society: Pres., J. F. Patrick, of Wenatchee; Sec'y, R. T. Congdon, of Wenatchee.

Director of Juvenile Department. Dr. Mabel M. Park, of Seattle, formerly asssitant medical inspector of the public schools, has gone to Madison, Wis., where she will be Director of the Juvenile Department of the State of Wisconsin.

Dr. H. H. McCarthy, for many years one of the leading practitioners of Spokane, has moved to Los Angeles, where he will make his home for the future.

Dr. E. R. Wilson, recently of Los Angeles, has located for practice at Bellingham. He succeeds Dr. D. E. Biggs, who has practiced in that city for thirty-five years.

Dr. A. A. Bird, of Seattle, has moved to Oakland, Cal., where he will practice for the future.

From a Yakima "Poet." The proposed hospital in Yakima under the auspices of the drugless healeres has inspired a resident of that city to break forth with the following lines, which he entitles:

CALL OF THE QUACK TO WASHINGTON

"Chiroquack, Saniquack,
Quack, quack, quack.
Humbug, Tommyrot,
Rubbin' razorbacks.

Silly goose falls for quack,
Quack, quack, quack.
Soon they see all their cash
In the quacker's stack."

Doctor Decorated. Last month Dr. D. C. Hall, Director of Physical Education at the University of Washington, was made a Chevalier of the Order of Saints Maurice and Lazarus by the King of Italy. The honor was conferred upon Dr. Hall for his services as Commander of thirty-three ambulance companies on the drive on the Italian front late in 1918 and his handling the situation so that the evacuation of wounded was greatly facilitated. The decoration was presented on the parade ground at Fort Lawton.

IDAHO

Medical Society Reorganized. Last month the Southern Idaho District Medical Association was reorganized at a meeting held in Boise. The society was active up to the time of the war, but they ceased functioning at that time. Forty doctors were present. They took action looking to the formation of a League for the Promotion of Public Health.

Wartned Against Anthrax. The Health Department of Idaho was recently warned by the New York City Health Officer of a shipment of horse hair shaving brushes which was said to be infected with anthrax, which was shipped from New York. It is suggested that it might be necessary to stop importing horse hair shaving brushes for a time.

Dr. J. F. Gist, formerly of Nez Perce, has located for practice at Lewiston.

OBITUARY

Dr. J. Eugene Jordan died in Seattle, March 21, at the age of 71, after an illness of two years. He was born in East Prussia. He received a medical degree at the Hahnemann Medical Institute of Chicago. He practiced in Seattle for about 35 years. In the early days he was a noted newspaper advertiser. At that time he had among his patients many of the leading residents of the city. At one time he was a member of the city council and later ran a close race for the mayorality.

REPORTS OF SOCIETY MEETINGS

SEATTLE SURGICAL SOCIETY

Pres., John Hunt, M.D.; Secy., H. T. Buckner, M.D.

The regular meeting of the Seattle Surgical Society was held in Seattle, Wash., Feb. 24, 1922.

Dr. A. O. Loe presented a very interesting and instructive paper upon the Treatment of Penetrating Wounds of the Abdomen. He reported twenty-eight cases treated at the Seattle Emergency Hospital during the past three years. The evident wound is sufficient for immediate consideration and, if there is evidence of visceral or vascular injury, immediate surgery. He advises prophylactic doses of antitetanic serum. For shock he recommends adequate doses of morphine to relieve the pain, and also the introduction of large quantities of fluids for the supporative action to the circulation and effects upon elimination. Good results were also obtained from blood transfusions. In treatment he employs a free incision for easy, quick and gentle handling of the tissues, first giving attention to vascular injuries, then to the visceral. Gentle handling of the tissues is less conductive to shock and lessens the risk of infection. In no department of surgery is the surgical sense and experienced maturity so necessary.

Discussion. Dr. Spiedel cited one case with nine perforations with recovery. Dr. Hagyard stated that the operations should be done quickly and should follow some definite plan. Dr. Willis mentioned the value of gastric lavage to help relieve the toxemia. He cited three cases and impressed the fact that you can not tell what has taken place inside. Dr. Mosiman mentioned the type of breathing in cases with injury to the stomach, the respiratory catch. Dr. Dowling mentioned bullets entering foreign parts and entering the abdomen.

Dr. Lamson presented a case of Gas Gangrene. A teamster, age 52, was working along a road in the country and sustained a crushed foot, that was almost cut off. Horse had been worked here and was possible cause of infection. Amputation being refused, gangrene soon set in and amputation was performed three inches above the ankle, three days after the injury. A second amputation was later performed through the thigh but the patient died the following day. Cultures were made and the bacillus of Welch found.

Discussion. Dr. Berge spoke of eight cases observed at the University of Pennsylvania Hospital. Only one was definitely proven to be of the Welch bacillus. He spoke of the characteristic odor and rapidity of advance, serosanganous discharge and crepitation. Dr. Dudley stated an open wound is not needed to develop the infection. One case developed in a closed reduction of a fracture of the femur. The infection may travel in the fascial planes. Dr. Dowling cited two cases occurring in ordinary laporatomies. Dr. Jones mentioned two types of cases encountered in the service, those that had nothing but local manifestations and those that came on suddenly with general systemic symptoms, giving appearance of a case with a massive internal hemorrhage. These latter cases were classified as gas septicemia.

Dr. Forbes presented a case with stomach symptoms over a long period of years. The x-ray findings were a markedly dilated stomach extending down into the pelvis with an obstruction at the pylorus resulting from pyloric ulcer. A pylorectomy was performed, the operation known as Billroth 1. The patient gained 45 pounds since operation and is in good health.

Discussion. Dr. Johanson spoke of the advantage of excising the pylorus on account of the possibility of malignancy.

BOOK REVIEWS

Edited by Kenelm Winslow, M.D.

The Physician Himself, from Graduation to Old Age. By D. W. Cathell, M.D. The Crowning Edition. 359 pp. $3.00. Published by the Author. Emerson Hotel, Baltimore, Md., 1922.

The author has published many issues of this book in years gone by. A generation of physicians has been more or less familiar with it. This "Crowning Edition," however, is an amplification of all the sage statements of preceding editions. It is a volume well worth the while of any physician to read and especially should be perused by every young physician beginning his life practice. Sir William Osler, after reading the preceding edition, said, "While there are plenty of men who can write other and greater books, there are not three others of us who possess the experience, the industry and the ability to write such a book on such a subject."

This is not a book on treatment, altho it contains many useful suggestions. It deals with the relations between the physician and his patient, his fellow practitioner and the world at large. "Discourse only of what you understand and refrain from interrupting the discussion of what you do not understand, by those who do." "Never pronounce any one's sickness feigned or trivial or say that he is exaggerating, unless you can show that it is so." "Never joke, talk frivilously or laugh about a patient or his illness." "In every case of fracture give a guarded prognosis from the first moment and never promise to make an arm or leg, hand or foot, as good as ever, only to get the best possible results. Unless you are an idiot, x-ray them all." "If a law suit comes, resist paying hush money and depend in justice and on the Masonry of Physicians, and fight it out in court." These quotations are bits of wisdom suggesting the contents of the book. It is commended to all readers.

SMITH

Protein Therapy and Nonspecific Resistance. By William F. Peterson, M. D., Associate in Pathology, Univ. of Illinois, College of Medicine, Chicago. With an introduction by John L. Miller, M. D., Prof. of Medicine. Rush Medical College, Univ. of Chicago. Cloth, 314 pp., $4.50. The Macmillan Co., New York, 1922.

The theory of immunity and resistance to disease is considered in all its bearings in this work. The conception that resistance to disease is always essentially specific has been abandoned, for reaction of the body to injury, i. e., inflammation, be it bacterial invasion, intoxication or trauma, is fundamentally similar. The resistance of the body consists in attempts to dilute the toxic agent, to remove it by intracellular or extracellular digestion, to neutralize it or, these failing, to wall it off. Nonspecific therapy tends to bring into play these factors in bodily resistance which remain latent until stimulated or

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activated, but is only successful when the protoplasm is sufficiently vital to react to stimulation.

The book contains chapters on the history of nonspecific therapy and on nonspecific agents, in which are included counterirritants, serums, split-proteid products, proteids, enzymes, tissue extracts, vaccines and bacterial products, chemical agents, etc. For even pure, physical and mechanical means, as irradiation, electricity, baths and massage, may bring about the same changes as protein therapy. There are chapters on the nonspecific reactions and theories concerning their cause and effect. Then the last eleven chapters are devoted to the more practical subject of the clinical uses and means of employing nonspecific therapy in arthritis, typhoid, gonorrhea, infectious diseases, miscellaneous diseases, paresis, tabes, disease of the skin, eye, etc., with indications and contraindications.

The entire work is written in a judicial spirit and is based on experimental and clinical studies of the greatest scientific value. The author and Dr. Jobling were the American pioneers in nonspecific therapy and their names are sufficient guarantee of the high character of this work, which is both instructive and of great practical value in therapy. The book is a worthy addition to medical literature. WINSLOW

Clinical Tuberculosis. By F. M. Pottenger, A. M., M. D., LL. D., Monrovia, Cal. With a chapter on Laboratory Methods by J. E. Pottenger, A. B., M. D. In 2 vols. Vol. 1, 707 pp.; vol. 2, 725 pp. Cloth, $15.00. C. V. Mosby Co., St Louis, 1922.

In this edition, the most comprehensive American work on clinical tuberculosis, there are additions in reference especially to the author's studies on pulmonary reflexes, and on reactions and symptoms due to the effect of toxemia on the sympathetic system. The author finds that about eleven-twelfths of tuberculosis in man is due to the human bacilli, but denies Koch's assertion that pulmonary tuberculosis is invariably due to the human organism. For it may happen that a gland affected with the bovine germ may break down and the bacilli be carried to the lung by the blood stream. This, he affirms, is the usual method of infection, the apex being more vulnerable by reason of its poorer circulation and movement. Bovine tuberculosis exists to the extent of about 25 per cent in childhood, but disappears altogether after the tenth year.

Pottenger finds many of the symptoms of tuberculosis due to sympathetic stimulation directly or by endocrines, such as the rapid heart, sweating, hypochlorydria and loss of gastric motility and appetite. There is an enormous amount of matter on the question of prompt diagnosis. The writer is a strong believer in the value of the tuberculin test, especially the von Pirquet test. The worth is in the nature of the reaction, rather than in its presence or absence. A prompt marked reaction means that the patient is, or has been, recently fighting active disease.

The second volume deals with complications and treatment. Rollier's surprising results in the treatment of tuberculosis, especially the surgical lesions, has given renewed interest to this method of medication. The author uses sunlight by means of blue glass mirrors to cut out the heat rays. In the discussion of climate the action of sunlight has evidently not been given enough weight in this part of the country. Indeed, it is only in favored regions, where the chemical rays from the sun can be obtained in their purity because of smoke and dirt in the air, that sunlight produces maximum effects. This work is unsurpassed for its completeness and excellence.

Neoplastic Diseases. A treatise on Tumors. By James Ewing, M. D., Sc. D., Professor of Pathology at Cornell University Medical College, New York City. Second edition, revised and enlarged. Octavo of 1,054 pages with 514 illustrations. Philadelphia and London: W. B. Saunders Company, 1922. Cloth, $12.00, net.

This work is so excellent that it needs but little comment. It seems the very best book on the subject of tumors that has been presented. The author's chief and most important object is to disassociate tumors from the conceptions that all tumors of the same kind are necessarily equivalent conditions. His contention is that, when a tumor is classified as a fibroma, or a sarcoma, or a carcinoma, this does not at once place its significance, prognosis or etiology; that two tumors of the same character may differ as widely in significance as does lobar pneumonia differ from pneumonic plague. Thruout, the work establishes a new conception of tumors and is well worthy of careful and intensive study.

WEST

Diseases of the Eye. A Handbook of Ophthalmic Practice for Students and Practioners. By George E. deSchweinitz, M.D., LL.D., Professor of Ophthalomology in the University of Pennsylvania. Ninth Edition, Reset. Octavo of 823 pages with 415 text-illustrations and 7 colored plates. Philadelphia and London; W. B. Saunders Company, 1921. Cloth, $10.00 net.

This ninth edition appears four years following the eighth. Ordinarily many changes would take place in our knowledge of ophthalomology over a period of four years, but this has been especially true during the past four years, immediately following the War. Marked changes are found in the chapters relating to the cornea, to plastic surgery of the eyelids, and to surgical procedures used in the treatment of trachoma. The same meritorius qualities that were recognized in Doctor deSchweinitz, when he was deservedly honored by being elected President of the American Medical Association, are apparent in this handbook. BENTLEY

NORTHWEST MEDICINE

The Journal of the State Medical Associations of Oregon, Washington, Idaho and Utah

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ORIGINAL CONTRIBUTIONS

MODIFICATION OF THE INDICATIONS FOR OPERATIVE INTERFERENCE IN GYNECOLOGY IMPOSED BY PRESENT DAY RADIUM THERAPY*

Roland E. Skeel, M.D.
LOS ANGELES, CALIF.

In taking up the subject before us I wish to assure you that I am not unmindful of the well earned reputation of our profession for chasing fads and riding hobbies, nor of the fact that intelligent, intellectual human beings still retain some of that herd instinct which impels them to follow the leader, if only that leader beats the tom-tom sufficiently loud and long. Even the youngest among us need not be reminded that venesection was regarded for years as a cure all, and that the chief point for discussion in the formal consultation of a hundred years ago was whether the patient should or should not be bled.

With the advent of anesthesia, and more particularly of asepsis and antisepsis, surgical fads came into being. To name but a few, oophorectomy was performed for neurologic conditions, trachelorrhaphy was abused beyond all reason and later on "here's a uterus let's curette it" might well have been adopted as a motto for the office of the gynecologist. It is even possible that some fads have taken hold on us at the present moment. For instance, if one had sufficient temerity he might intimate that the present theory of focal infection had come pretty close to degenerating into a fad in some quarters and, if he were inclined to be sarcastic, he might point to the lack of health, staying power and all round stamina evidenced by the British, French and German soldiers, whose lack of proper dental attention was notorious in the late unpleasantness.

Then, too, evidence is not lacking that the art of operative surgery is becoming a decided fad. Standing by itself, the skillful performance of an operation is a purely technical matter which might be taught to any reasonably intelligent man with a set of dextrous fingers and rapid coordination. The successful completion of a spectacular operation, like cesarean section or the painless removal of a large fibroid from a patient carried to the border line between life and death by anesthesia, is a source of pride and gratification to the operator, but in this pride and gratification lies the danger that the real objective of operative surgery will be overlooked.

More important than the purely technical procedure and more frequently neglected is the scientific surgical diagnosis, the scientific sensible determination of the prognosis with or without operation, the exercise of surgical judgement as to how little or how much should be done and what should be the after care in order to secure the best result. In short, a proper consideration of all the factors that will contribute to the paramount object of every operation, viz, the best interests of the patient. When we neglect these we degenerate to the level of the bone setter and neck twister and before we object to the technician, whether it be the anesthetist, radiographer or pathologist, we should remember that, if we plucked the beam from our own eye, we might see that the development of the technician surgeon, who forgets his scientific principles and humanitarian outlook, is not a whit better than the development of the lay technician who presumptively has neither.

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* Read before the Twenty-Seventh Annual Meeting of Utah State Medical Association, Salt Lake City, Utah, Sept. 13-15, 1921.

On the other hand, out of the multiplicity of fads there have arisen the few definitely demonstrated facts which furnish the basis of true surgery today. Inhalation anesthesia was by many regarded as a hobby. The idea that disease might be produced by pathogenic microorganisms was pooh-poohed as the wildest flight of wild fancy. Semmelweiss was persecuted to his death for propounding the infectiousness of "purperal fever." In fact, any revolutionary idea is just as likely to meet with widespread and virulent disapproval by some, as to be carried to extremes by others.

All fads have some virtue; every brass brick sold as gold is worth something; even christian science has a microscopic element of truth concealed under its fantastically camouflaged religious and financial exterior. So far as surgery is concerned, overenthusiasm and the desire to exhibit something new frequently leads to the premature exploitation of methods and procedures on insufficient grounds, so that much harm is done before the chaff is winnowed from the wheat.

None of the foregoing is to be construed as a criticism of our profession which as a body is composed of the most intelligent, thoroly educated and conscientious members of any community. On the contrary, it is put before you to indicate the writer's realization that the conditions which surround the use of the x-ray and radium contain elements designed to make of radiotherapy a most pronounced fad and, having an outstanding distaste and dislike for all fads and extreme points of view, he is not likely to overstate the case for so appropriate a subject for faddism as radium therapy.

Certain gynecologic conditions of which I wish to speak have been betes noirs for the surgeon from the time that gynecology became a specialty. There is one, whose pathology is multiple, variously termed hemorrhagic endometritis, chronic metritis, subinvolution, uterine arteriosclerosis, etc., but whose outstanding feature is mentrual hemorrhage; another, small multiple myofibromata causing hemorrhage; and the last is carcinoma of the cervix.

The first two have annoyed all conservative surgeons because the only cure for a certain number of them was hysterectomy, and the severity of that operation seemed all out of proportion to the condition for which it was being performed. The last is more than an annoyance. It is a standing disgrace, first, because so few patients are cured and, second, because so many heroic painful operations are performed without the slightest benefit to the patient, and for this reason surgery is discredited in the minds of patients, their friends and acquaintances.

As has been stated above, the first class includes a variety of conditions, of which menorrhagia is the outstanding symptom. Included in in it are the menstrual hemorrhages of the adolescent period, the etiology and in many instances the pathology of which are uncertain. Many of them seem to be instances of ovarian instability or overactivity. Possibly they are endocrin disturbances which rectify themselves as development goes on. One case coming under my own observation was that of a young girl with an adenomatous overgrowth of the endometrium, so extensive as to give rise to a suspicion that the patient had recently miscarried at two or three months, a suspicion which was not abolished until the microscope determined the character of the uterine contents.

During the active child bearing period menstrual hemorrhage is common, following abortion and full term labor, more frequently perhaps after the former than the latter. If the uterus is badly displaced, circulatory disturbance may be responsible and the hemorrhage cease at once, when the uterus is replaced and maintained in proper position. In others the uterus is found in proper position and freely movable, the body and fundus are rounded, considerably over size and less firm than normal. In other words, the physical findings are those of early subinvolution. Curiously enough there is much dispute as to the microscopic anatomy of the myometrium under these circumstances, but the endometrium frequently is found to be hypertrophic, and decidual cells can sometimes be seen in sections from this structure. It is debatable whether the origin of the difficulty is a low grade infection or the actual retention of a sufficient number of decidual cells to stimulate overgrowth of the endometrium.

In any event the number of minute blood vessels which exist in the endometrium and are thus available as sources of hemorrhage during the menstrual period is enormously increased, and to my mind this is the one and only condition in which gynecologic curettage is valuable as a therapeutic procedure. Even here there is a residuum of cases which repeated curettage does not cure. To this class also may be added those cases with menstrual or intermenstrual hemorrhage which are diagnosed as chronic metritis or fibroid uterus. The patients may or may not be married, may or may not have had children, but practically all of them have reached that age which leads them to regard the bleeding as one of the phenomena of the menopause.

Physical examination reveals the large regular round uterus above mentioned but the organ is hard instead of soft. We will not enter into the pathology, which is disputed, probably because there is more than one pathologic entity producing the same gross result. Of prime importance is the question of diagnosis and here diagnostic curettage together with removal of a section from the cervix is always indicated, uterine polypi and cancer either of the fundus or cervix being possibilities of too serious import to neglect. In the case under consideration not only will the microscopic examination be negative as regards malignancy, but frequently there is difficulty in securing enough endometrium for a satisfactory examination.

Now a fairly large proportion of adolescent menorrhagias will cease either spontaneously or under general treatment, but nothing seems to feaze this menopausal bleeding excepting the spontaneous normal termination of menstrual life, an event which is likely to be almost indefinitely postponed. Thus we have left for consideration a few cases of the first two types and practically all of the last, in which hemorrhage is so profuse and the prolongation of menstruation so annoying as to have justified the radical operation of hysterectomy in the past, an operation technically simple and with a death rate near the vanishing point, but vitally objectionable in the adolescent, because it practically blanks her hope of marriage, a little less objectionable in the woman who has borne children, but mutilating nevertheless and always undersirable from the standpoint of the patient's mental attitude towards anything which she regards as making her any less a woman than she always has been. In these cases radium can and should supersede radical surgery. We are not concerned at this moment with contraindications to its use nor the technic of its employment, but the dosage should be so regulated that only temporary cessation of menstruation is brought about in patients under forty, while permanent cessation is sought for after that age.

Only a short nitrous-oxide anesthesia is required; there is no after pain, no protracted convalescence, and no disagreeable after effects other than some mucopurulent discharge.

Uterine myofibromata. It goes without saying that the large, rapidly growing, infected or necrotic fibroid should be removed surgically. The risks of retention within the abdomen of such tumors are so much greater than the danger of operation that there can be no question as to the wisdom of surgical interference. So, too, the tumor fixed by adhesions or complicated by tubal infection is better out than in.

There are, however, a goodly number of small multipal tumors, situated definitely in the uterine wall, which are productive either of no symptoms at all and are discovered by accident, or are found to be the indirect source of menorrhagia. The uterus is freely movable and there is no suspicion of serious complications either in the tubes or ovaries.

In the past one's attitude towards these tumors has fluctuated from extreme conservatism, based on a knowledge of the innocuous character of the fibroma per se, to extreme radicalism based on the fear of malignant degeneration.

One would always think of myomectomy as truly conservative in these cases but for the fact that repetition of the operation is so frequent a necessity unless the patient is near the normal menopause, a solitary small fibroid being almost as rare as a solitary gallstone. Here, again, there would seem to be a legitimate field for radium therapy to the exclusion of operative surgery. As in the hemorrhagic cases previously mentioned, a short nitrous-oxide anesthesia and diagnostic curettage to exclude malignancy, followed at once by the intrauterine application of properly screened radium, secures temporary cessation of menstruation and positive shrinking of the uterus, while a large dose causes permanent cessation of menstruation.

Certain other cases might be mentioned, in which the surgical risks are great because of heart or kidney lesions and in which one would prefer hysterectomy to a conservative policy, if not deterred by the operative risk. That the hemorrhage can be controlled in these cases is quite certain, but the ultimate effect upon the tumor and the consequences to the patient of the rapid absorption of a large mass of organic material we are not in a position to state at present. However, the cautious use of radium may occasionally convert a permanent invalid into a reasonably healthy individual which certainly is preferable to a brilliant major operation with an operative death as the result.

Cancer of the cervix. What was said at the beginning of the paper upon overenthusiasm is exemplified in the history of the treatment of cancer of the cervix. Nearly a century ago Lis Franc reported that he had operated upon ninety-nine cases of cancer by amputation of the cervix and only 15 per cent of these either died or suffered a recurrence, a record which could not be equaled by any method of treatment known today. As a matter of fact one of his assistants reported a few years later that Lis Franc's operations were only one-third of this number and his cures were absolutely nil. At that time, of course, anesthesia and asepsis were undiscovered and the microscope, while used somewhat in the study of pathology, was unknown as a factor in diagnosis.

It is but little more than half a century since Virchow and Rokitansky established quite definitely the pathology of cancer, and less than half a century since a knowledge of the cause of infection inaugurated methods for its prevention, thus stimulating efforts to cure cancer by radical surgical removal. From that time to the present moment the most persistent search into the cause of cancer has been without definite result, and every known form of treatment has been adopted at one time or another in the hope that a cure was within reach. While on the whole there has been improvement in the results obtained by radical surgery, especially in cancer of the breast and stomach, the percentage of cures in cancer of the cervix has increased but little since the days of John Byrne and his amputation with the thermocautery.

Probably in a broad general way one may say that the mortality rate for the extended panhysterectomy of Ries, Clark and Wertheim in the hands of the average abdominal surgeon runs between ten and thirty per cent. The percentage of permanent cures of those operated upon averages up about the same, while the operability in the hands of these same men would be less rather than more than fifty per cent. To put the matter in another way, one-half of all patients with cancer of the cervix would be considered inoperable when first seen by the surgeon, one-half would be operated upon with a permanent cure of from ten to thirty per cent of the operated cases, and for each cure there would be one operative death.

Selecting at random two sets of figures, those of Graves and the most recent available of Wertheim's, the former shows 64 percent operable, 5 per cent deaths, and 32-29 per cent of cures in those operated upon, while Wertheim, whose figures are a little older, shows 50 per cent operable, 19 per cent operative deaths, and 38 per cent cures among those operated upon, and these are the results of skilled experts. Between the results obtained by these experts and those of the average surgeon there is an enormous gap. It is within my own observation that surgeons, having good result and low rate mortality in the common abdominal operations, such as appendectomy, cholecystectomy, supravaginal hysterectomy for fibroids, etc., become lost in endeavoring to do a Clark-Wertheim and finish by doing a very ordinary panhysterectomy in order to avoid a death on the table. When one considers that, just as the great mass of all obstetric cases are in the hands of general practitioners, so the great mass of all surgical patients are operated upon by the average surgeon, he can well believe that the mortality rate given above is conservative to say the least and the operability rate too high rather than otherwise.

Forty years ago Lawson Tait reported never having seen a cured case of cancer of the cervix following any procedure whatsoever, while Byrne was able to report freedom from recurrence for a period of six to eight years "in a few cases," following his method of amputation of the cervix by the cautery. Compared to Tait's none at all and Byrne's few, the results today reveal some improvement but this is pitiably small in comparison with the improvement in cancer of the breast. In this latter two factors, earlier diagnosis and more radical operation, have been responsible for the improvement noted. In cancer of the cervix the most difficult widespread operation does not extend beyond the primary disease by one-half the distance allowed by the most ordinary amputation for cancer of the breast, leaving out of consideration the easy block dissection of the lymphatics in the latter, and the former carries a high mortality rate, while in the latter a death is so rare as to be negligible.

As regards the permanent cures of cervical cancer that are observed, I think it not unfair to conclude that such improvement as has taken place since the time of Byrne is to be attributed in greater degree to earlier diagnosis than to more extensive operation, and there can be no doubt that the mortality rate is enormously lessened, if operation is performed before there is an open breaking down of tissue and secondary infection of the diseased area.

To repeat, the combined statistics of experts show that out of one hundred patients with cancer of the cervix, fifty are seen too late to have any radical operation performed; fifty undergo a shocking painful operation; from which from five to ten die and less than twenty survive the five-year period without recurrence. If we estimate that twice the mortality and one-half the curability rate is fair for the average surgeon, our one hundred patients are disposed of by having ten permanent cures, at least ten operative deaths and all of the remainder succumb either to recurrence or from a continuation of their disease because they were seen too late for operation.

Granting that operation has relieved some suffering, even in patients with postoperative recurrence and that those who have died have been given euthanasia, what is the effect upon the patient, her relatives and acquaintances and the community at large of the inoperability of a large percentage of patients applying for treatment, the death of one out of every ten of those operated upon, and a rate of recurrence so high as to justify to the lay mind the idea that "cancer always comes back"? There seems to be but one possible answer, that it is detrimental to the community and damaging to surgery.

In view of the foregoing, and in view of reliable reports of what radium has accomplished in the way of palliation without operation and without pain, I am asking in all sincerity whether the time has not arrived for us to narrow our general conception of operability to those cases, in which only the diagnosis of "suspicious" can be made by the clinician and at an so early a date that the pathologist must needs confirm this suspicion in order establish a positive diagnosis of malignancy. Certainly this would conform to my own limited experience with radium, altho this experience has extended over a rather long period.

Granting that this conception of an operable case may be too narrow to be applied by a few very expert and experienced operators, it seems to me on the whole to be the best that can be adopted by the remainder of us. However this may be and whether you will agree with me on this chief point, no one can question the superiority of radium in cases which all recognize as inoperable, providing of course massive extension and hopeless metastases have not as yet taken place. The relief from pain, foul discharge and bleeding is as certain as from any operation with which I am familiar and treatment by radium avoids those accessories of preparation and anesthesia which all patients dread.

Any adequate consideration of cancer of the cervix alone would receive more time than has been devoted to the entire paper, but such facts and opinions as it has been possible to compress are put before you for discussion in the hope, first, that they may stimulate earlier diagnosis and as a corollary, second, lead to a higher percentage of *early* radical operations and, third, to a much lower percentage of operations of any kind upon those patients in whom the malignant process has advanced so far as to make diagnosis easy and positive by the unaided senses.

In conclusion, permit to to say that as a surgeon I believe, since the advent of radium therapy, the so-called idiopathic hemorrhages should be subjected to no operative procedure other than that necessary for diagnosis, and that a fair percentage of "border line" fibroids are adequately treated by radium, if they are selected with great care.

Finally, if straws indicate the direction of the surgical wind, this paper will sound ultraradical in the immediate future, when the very earliest cases of cancer of the cervix will be subjected to such minor procedures as amputation with the cautery, possibly preceded and certainly followed by radium, while a case sufficiently advanced to permit of clinical diagnosis will be considered entirely outside the domains of surgery and treated by radium or radium and the x-ray.

THE ROENTGEN RAYS AS AN AID IN THE DIAGNOSIS OF DISEASES OF THE MASTOIDS AND NASAL SINUSES.*

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I wish to claim no originality for anything in this paper. It is an endeavor to correlate and repeat certain ideas, facts and observations with the hope that a more frequent use of the roentgen rays in the conditions under discussion will be stimulated and found to be helpful and of value. Many of the men in my vicinity do not use the rays in examination of the nose and mastoid except occasionally, and I believe this is because their value is not appreciated or is undervalued.

The roentgen ray is not an agent to show merely the size of the nasal accessary sinuses, but has definite value in showing pathologic conditions of these sinuses. The size, position, depth, outline and condition of their walls are easily demonstrated because they contain air and are surrounded by bone. One side should be compared with the other as to depth and density, and when both sides are slightly hazy one must depend on his mental idea of the density usually seen. If one side has less depth than the other, we must expect a difference in density under normal conditions. Exudates, tumor formations, thickened membranes or diseases of the bony walls are conditions which give roentgen findings on properly exposed radiographs.

All of the sinuses are demonstrable with our present technic, but the most valuable information is obtained from the frontals, anterior ethmoids and antra, altho I personally believe that valuable information may be obtained from the sphenoids and posterior ethmoids, if films are taken in lateral, vertical and oblique positions.

We must not expect always to differentiate between the different kinds of fluids (as pus, or blood) and thickened membranes. However, in a few cases fluid can be diagnosed by changing the position of the head in taking the plates; from horizontal to oblique or vertical, for instance, thus changing the fluid level and causing a change in the density level.

If one side is involved, there will be a definite difference in density. When both are involved, we find it helpful to observe the density in the rest of the sinuses as a matter of comparison. Where all sinuses are involved, diagnosis is easy, provided we have good radiographs. One must be careful not to interpret the haziness of a poor radiograph as due to pathology. Absence of sinus, and difference in size, position or depth must always be kept in mind. The location of pockets of exudates are shown and this is particularly true of anterior ethmoids.

Views of the frontal sinuses in both lateral and posteroanterior positions give definite information as to size and depth of each side. These sinuses are frequently not symmetrical in size and depth, and the films show this clearly. General haziness with slight decrease in density in any sinus usually means thickened membranes, and in the case of frontals this is confirmed by thickening of septal markings, which are hazy and are surrounded by an indefinite zone of slightly increased density, as contrasted with the usual sharply outlined septa.

Granulations, pus and tumors produce shadows of greater density. Tumors usually give some

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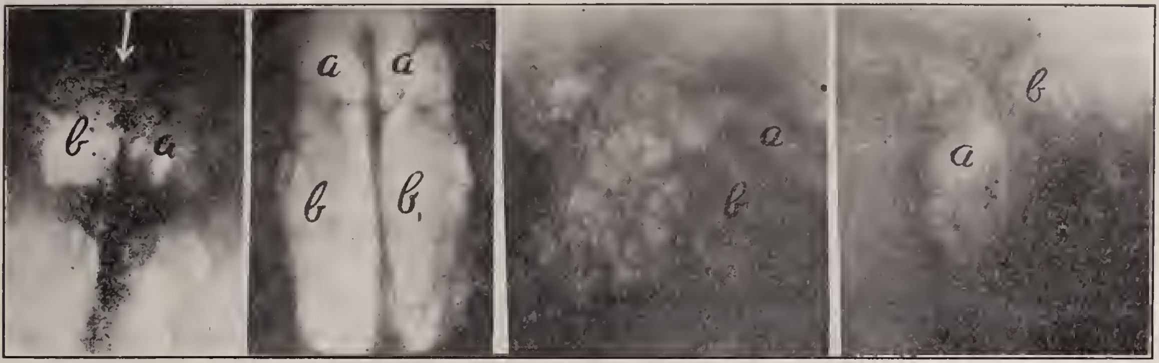

Fig. 1 Fig. 2 Fig. 3 Fig. 4

Fig. 1. Oblique view of sphenoids: (a) Cloudy sphenoid, (b) Normal sphenoid. Fig. 2. Vertical view of posterior ethmoids and anterior portion of sphenoids; (a) Sphenoids, (b) Posterior ethmoids. Fig. 3. Normal pneumatic mastoid; (a) Lateral sinus, (b) Emissary vein. Fig. 4. Acute mastoiditis: (a) Bone absorption and cell necrosis, (b) Cloudy mastoid cells.

evidences, such as erosion or invasion of adjacent bones. An osteoma is rare, but when seen it shows as an area of ivory-like increased density. Polypi are occasionally seen in frontals or antra and show as round areas of increased densitv, and with evidences of thickened membrane. A sinus filled with mucus may not cast a shadow of increased density. In acromegaly the frontals are usually very large. Tumors of accessory sinuses are either primary or secondary. If primary, it is usually sarcoma. The most frequent site is the antra.

The anterior ethmoids frequently show cells both in supra and infraorbital regions. Faulty technic in taking films of this region may be very misleading. It is important to have head straight and for the central ray to pass thru the median line. If this is not done, false impressions of comparative density and size will be given.

My technic for examination of the nasal accessory sinuses is routinely as follows: Three 8x10 films using double screens. Two of these are taken in posteroanterior direction, one for the frontals and anterior ethmoids, having the central ray directed at a 23 angle thru the frontals, the forehead on the plate, using 4 1-2-inch gap, 25 M. A., 18-inch distance, 4 or 5 seconds time. The other is taken for the antra with chin on casette, nose 1-2 inch to 1 inch from casette, using a 5-inch gap, 25 M. A., 18-inch distance, and 5 to 6 seconds of time, 5-inch cone. On the other films are two exposures, one with 3 1-2-inch cone centered over frontals, and the other centered over sphenoids and posterior ethmoids with 2-inch cone. The former is exposed 1 1-4 seconds, the latter 2 1-2 seconds.

If there is any doubt about the sphenoids and posterior ethmoids, a vertical, oblique and lateral view from the other side may be made. In operative work on the sphenoids it is sometimes impossible for the operator to be sure he has entered the sphenoid. With a probe in position and stereoscopic plates, information of a positive character is obtained.

MASTOIDS

The roentgen examination of all cases of positive or suspected mastoids is, I believe, worth while. It gives information as to the size and extent of mastoid area, whether the cells are thruout, and whether they extend to the zygomatic region, their character and type, evidences of pathology, probable absence or presence of bone absorption or necrosis, and the position of the lateral sinuses and emissary veins. The generally accepted idea that roentgen examination of children under five is of no value because of the lack of cellular development I cannot agree with. Frequently I have found this to be erroneous, and today, with the use of films and double screens, we have little difficulty in getting diagnostic radiographs of children of any age.

Cheattle, of England, divides all mastoids into two types: infantile and pneumatic.

The Infantile Type. The characteristics of this type are that the outer wall of the mastoid antrum is composed of a layer of compact bone known as the antral wall; inside of this a few cells, then the mastoid mass itself. This mastoid mass may be of diploetic structure or just dense bone with or without a few cells. If either of these types remain thruout child or adult life, we have the so-called infantile or undeveloped type of mastoid. This type occurs in about 22 per cent, 20 per cent being of diploetic structure and 2 per cent of dense hard bony type.

Another type may be present which is a mixture of the infantile and pneumatic types, the former predominating. The important characteristics shown by the roentgenograms in the infantile type are the dense outer wall and the forward position of the lateral sinus. The mastoid antrum may be small or large. When large the anterior wall will be dense and the posterior wall thin and the latter will be close to the lateral sinus or dura. This is important because the antrum may be hard to find because of dense bone and because of complications with the brain, lateral sinus or facial nerve.

Infection of the mastoid usually begins in the antrum, extending from the middle ear. The thick antral wall of the infantile type has a tendency to prevent the spread of infection to the mastoid mass for a long time; and in these cases we can have involvement of the lateral sinus or brain without having at any time clinical evidences of a mastoiditis except a chronic discharging ear of a subacute or chronic character.

The exact structure of the infantile type cannot always be shown, due to the thick antral wall but sufficient information is usually obtained by roentgen examination to make it well worth while. When we find the lateral sinus well forward and a few cells near the tip or posterior to the middle ear, we are usually dealing with one or another type of the infantile mastoid. This knowledge, gained from radiograph examination, tells us that, in order to avoid a serious or chronic mastoiditis, the antrum should be drained early. This is a much less serious operation than a complete radical mastoid operation. The thick antral wall prevents early extension. The presence of the dense wall and few scattered cell type also indicates early drainage of the antrum.

The Pneumatic Type. This type is developed by a projection of the antral cells thru the antral wall into the mastoid mass.

The principal divisions of this type are (1) the pneumatic type usually seen with numerous cells and thin trabeculæ; (2) a combination of the infantile and pneumatic types, the latter predominating; (3) a double-decked affair, the pneumatic cells in the outer layer and an inner layer of diploetic structure. In some cases stereoscopic examination will show this double decked condition, and if so, this is valuable information. Both layers should be removed at operation to make the operation complete and successful.

In the pneumatic types operation is not indicated early except to maintain drainage thru the ear drum, until we have definite evidences of bone absoption or necrosis, or unless the middle ear continues to discharge for a prolonged time. Of course evidences of abscess of dura or sinus demand immediate operation. The tip and posterior portion of the mastoid drain thru the gutter of the mastoid which is that portion just behind and below the middle ear. This means that the drainage is in an upward direction and because of gravity is not satisfactory. Dr. Swift, of Seattle, says that all mastoids, in which the gutter portion shows pathology after a few days of good drainage thru middle ear, will sooner or later come to operation in order to have recovery. This gutter portion and the antrum are the portions which usually show the first signs of bone absorption or necrosis.

Mastoiditis always begins as a hyperemia and, if it continues, a true inflammation of the mucous membrane which lines the cells takes place. If the inflammation is of sufficient severity, we have formation of pus in middle ear, antrum and mastoid cells if the latter are present.

Rupture or paracentisis of drum allows a discharge of serum or pus from middle ear, antrum and part or whole of mastoid cells. If this discharge is free enough and the type of mastoid is favorable, resolution may occur and the mastoid may clear up gradually. If the drainage is insufficient, we have an increase in the pressure within the mastoid cells. We may have peneration of a thin cortex or softening and breaking down of cell trabeculae and necrosis. Even at this point the resistance of the patient and adequate drainage may cause the process to clear up and a radiogram taken at some future time will show a large cell instead of several small ones. This necrosis most frequently occurs near knee of sinus or in tip. If the necrotic process continues, we may have a perisinus abscess or epidural abscess.

Radiographs are a tremendous help in determining whether or not to operate, but all of the evidence must be considered and not these alone. When, however, we have definite roentgen evidences of perisinus or epidural abscess, or of cell necrosis and bone absorption, or the presence of an infantile mastoid, the roentgen examination should decide the question in favor of operation.

Both mastoids must be examined routinely as an aid in diagnosis by comparison. I use stereoscopic plates except in the very young. The additional information gained and properly interpreted will lessen the number of mistakes and definitely increase the value of the roentgen examination.

Acute mild mastoiditis will show as a hazy condition of the cells, the trabeculae of which are easily seen. This may be caused by middle ear inflammation, inflammation of soft parts near mastoid or inflammation in auditory canal.

Acute purulent mastoiditis shows as definite haziness of pneumatic cells but cell walls can still be seen. If the drainage remains adequate, operation may not be indicated. The drainage is thru the antrum and this is more free if the cells in this region are large; and less apt to be sufficient if the cells are small, in which case there may be a blocking from swollen membrane or thick pus. Successive radiographs may be needed at few days' interval, to determine progression or retrogression of the process.

Severe acute purulent mastoiditis will show a definite opacity of the cells and absence of cell walls. This indicates bone absorption and preceeds the definite formation of an abscess. When bone absorption takes place, the sinus wall will have less calcium salts and therefore be less distinct than the opposite side. At this stage the sinus may be uncovered, or covered by a very thin bony wall. This condition may or may not be accompanied by an exaggeration of clinical symptoms, and demands operation within a few days.

Acute purulent mastoiditis with abscess formation is shown by increased density of cells and absence of cell trabeculæ, and presence of areas of decreased density due to marked bone absorption, due to pressure of pus within cells. This abscess usually occurs first near knee of sinus or in the tip, and the walls of lateral sinus are less prominent or entirely absent. We must be careful not to confuse an area of bone absorption with a large cell. The large cell usually has a similar cell on the other side and the edges are more sharply defined than abscess. We must also differentiate from cholesteatoma which shows a sharp outline due to osteitis producing bone production.

Decrease of density in region of tegmen tympani may be due to extension of infection into squamous or zygomatic cells or to exposure of dura and epidural abscess. Cholesteatoma is a cavity filled with debris and surrounded by a denser area of bone, is a chronic process usually found in region of antrum, while abscess is usually found near sinus, tegmen tympani or tip.

We may find it difficult to differentiate between sclerotic and infantile mastoids. In the sclerotic type we have the history of a chronic long standing middle ear infection. The infantile type will probably be found the same on both sides. Most of the cases of sclerotic mastoids are really undeveloped mastoids. In the sclerotic type the borders are more sharply defined. In the infantile, the lateral sinus is well forward.

In the postoperative cases which do not heal and the discharge persists we will find the radiograph of great value in showing whether the cells have been incompletely removed which is usually the case. This is less likely to happen if the extent of cells, size and type of mastoid are known before operation.

My technic for mastoids is stereoscopic films, using double screens, small Coolidge tube, 4-inch spark; 25 M. A., about 18 inches distance and 2 1-3 to 3 seconds of time.

A view of each mastoid is first taken thru the mastoid straight, center of tube over external meatus. Shift of tube is then made posteriorly, the tube tilted forward with the head resting on a 23 degree angle. This gives a stereoscopic radiograph as valuable as any method in my opinion, and also gives a pair of valuable plates that can be used as flat plates. Each mastoid is on each film and they can readily be compared flat or stereoscopically.

CONCLUSIONS

Recognition of the infantile type of mastoid in cases with middle-ear infection, plus a drooping of the superior posterior canal wall, calls for exploration of the antrum early, even without clinical signs of mastoiditis, thereby eliminating a large percentage of chronic mastoids and brain abscesses.

The presence of the pneumatic type of mastoid with definite evidences of mastoiditis but without cell necrosis or bone absorption does not always call for immediate operation, other than paracentesis of ear drum.

Information gained by radiographic examination of mastoids with knowledge of the structural types enables us to more definitely predict the clinical course and prognosis of middle-ear infections.

Proper technic with films made from different positions and intelligent interpretations are of definite value in diseases of all the nasal accessory sinuses and of all suspicious or pathologic mastoids.

Diagnostic Value of Determining Vital Capacity of Lungs of Children. The accumulating evidence which shows the clinical importance of determining the vital capacity would indicate that the spirometer may well be added to the increasing armamentarium of instruments of precision in clinical medicine. Before the determination of vital capacity can be of any practical clinical value, it is essential to have available for the clinician: (1) a standardized method and technic which is not tme consuming, and as simple as accuracy permits; (2) an accurate normal standard indicating the normal range, and (3) the evaluation of the various factors which may be expected to influence vital capacity measurement. An investigation was undertaken by May G. Wilson and Dayton J. Edwards, New York, (Journal A.M.A., April 15, 1922), with these objects in view. A simple method and technic was adopted for the determination of vital capacity in children from 6 to 16 years of age. A normal standard of 1.93 liters per square meter of surface area, allowing a plus or minus 10 per cent. deviation (giving a normal range of from 1.74 to 2.12 liters), has been established from a study of a representative group of children.

REPORT OF RADIUM CASES OF HEAD AND NECK*

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Much has been written about radium, and most of you who are interested in the subject have some idea of its physical and chemical properties. Personally, I consider radium one of the greatest aids to medical science that has been produced this century. I also consider it a very dangerous agent, when used indiscriminately and unintelligently.

There is no hard and fast rule for its administration. Each individual case must be distinctively treated, just as much so as pneumonia or appendicitis. We must take into consideration the patient's general health. We must know how he is fighting his cancer invasion. If there is a natural or artificial immunity, are we liable by under- or overraying to break it down? Where the buccal or lingual surfaces are involved, are we dealing with cancer alone or have we also a leutic infection? Powers[1] states that over sixty per cent of all cancers of the tongue are found in leutics, and that cancer is greatly on the increase because of the increasing incidence of syphilis.

Has the normal healthy tissue been weakened and the pathologic tissue been altered by caustics, excessive x-ray, radium treatment, arsenical pastes, etc.? I cannot understand how silver nitrate and iodine have received their popularity as the treatment per se in early buccal or lingual malignancies. In going over a large group of histories while at the Mayo clinic, it was astounding to note the great number that stated their first treatment had been application of silver nitrate or iodine, and the distressing feature was that these treatments had been continued for weeks and even months, until there was a complete glandular involvement. Of course, the real cause for this form of treatment is the mistaken diagnosis. The best plan when you find an ulceration of any kind in the mouth in patients past forty, is to first exclude cancer and, until you have done this, do not stimulate it into activity by caustics.

The action of radium is dependent upon

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three distinct types of radiation, emitted from radioactive bodies, which have been called the alpha, beta and gamma rays. A very close analogy exists between these rays and those produced in an ordinary x-ray tube. Numerous and exhaustive articles have been written on the action of these rays by such men as Voil[2] and Knox[3]. I advise those who are interested in the physics of radium to read the original articles.

The question which concerns the average user of radium is, what is the safe lethal dose? Those who have watched their first cases carefully find out how much radium it takes to produce an erythema. We must recognize that very few malignancies are cured by an erythema dose. wood and Prime[4], in their study of lethal doses in mouse tumors, come to the practical conclusion that the amount of roentgen ray necessary to kill all cells of a rapidly growing, very cellular and highly malignant sarcoma or carcinoma in man is between five and seven erythema doses of filtered roentgen ray, when the tumor is on the surface of the body. Every centimetre of tissue that covers the tumor makes an additional amount of roentgen ray necessary. They further conclude that, at a depth of ten centimetre from the surface, "while many tumor cells may possibly be slowed in their progress and mitotic forms killed at such depth, it is doubtful whether all can be destroyed. The basal cell tumors and the lymphosarcomata are, as is well known, much more susceptible to radiation."

It is to be remembered that Wood and Prime are speaking of only the direct effect or radiation on malignant tissue, but there is an indirect effect of radiation on malignant cells by the formation of fibrosis which starts three or four weeks afterwards. Both are important, and a lethal dose should always be given whenever possible, but less than a lethal dose sickens malignant tissue as Mayo[5] expresses it, and starts the formation of fibrous tissue which is a barrier against the disease. At present, by burying radium needles, a lethal dose can nearly always be given, but in the treatment of deep metastatic glands we may be compelled to depend upon both the direct and indirect effect of radiation on malignant cells.

Boggs[6], in a paper on "Radium in the Treatment of Carcinoma of the Cervix and Uterus," discusses the difference between the erythema and lethal doses of radium and the roentgen rays. An attempt was made to show that many were treating the local growth efficiently, but only a small number of these realized the difficulty in treating the metastatic lymphatics.

In presenting the following cases I do not expect to bring out any new or particularly interesting thing. But I do feel it the duty of those who have had the experience of using radium to report in detail their results obtained so far, and especially to follow up reports as time goes by. My work with radium has been mostly confined to head or neck conditions.

Case 1. Man, aged 57. Comes on account of sore on left side of throat. Eight months before consulting me had a sore on left tonsil, causterized with various caustics for a period of two months. His throat did not improve and he discontinued treatment for three months. During this time he lost considerable weight and was in almost constant pain. He consulted another doctor, who treated him for lues, in spite of the negative history and negative Wassermann. His last treatment previous to consulting me was burning with electric cautery.

Examination shows a thin, emaciated man, cook by profession; had drank heavily in early life; heavy smoker; lower teeth gone and he is wearing an ill-fitting rough plate. On his left tonsil was seen a pearly exuberant growth, extending into posterior pillar and up to base of uvula. Lower one-fourth anterior pillar covered with growth. Biopsy squamous cell carcinoma, type III. No neck glands palpable.

Fifty mg. of radium for ten hours, screened with 1/10 mm. of silver and 1 mm. of rubber held in place by a specially devised lead applicator. Seventy-five mg. of radium over neck glands for thirty-six hours, screened with one inch porous wood and 1 mm. of lead. This treatment was repeated in ten hours and again three times at six week intervals.

At the end of the first month no active growth could be seen in tonsillar area. Some slough present and base of tongue sore from radium burn. Four months after first treatment block dissection of his neck glands, and no evidence of any metastasis. Eight months have passed, patient has gained ten pounds in weight and is following his usual vocation.

I have had two other cases of cancer of the tonsil. One was far advanced and died within six months. Another is alive eighteen months after receiving his first treatment, but I have very little hope for his ultimate recovery. He lived out of town and did not have enough money to pay repeated railroad fares. All of these patients are advised to have rather massive coolidge tube treatments at fourteen day intervals. Care should be taken that the skin is not burned.

Case 2. Woman, age 42, married, no children, general history negative, referred to me for radium treatment.

History: Four years ago had a pigmented growth removed from top of head; growth had been there for fifteen years, but had given her no trouble. It began to grow rapidly and was removed by family doctor. Soon after this a lump appeared in front of left ear; four months later this was burned out with some form of cancer paste. Shortly after this she noticed a recurrence of the growth on scalp, and an increase in the size of the glands on left side of the neck. She went to a large clinic, where the growth on the scalp was removed with cautery and a block dissection of neck on left side; two months later she was referred to me.

Examination showed patient well nourished; general physical condition negative; examination of scalp showed three pigmented growths about the size of hazel nuts; biopsy melanoepithelioma. Examination of neck showed a gland about the size of an almond in lower supraclavicular area, fairly well fixed.

Seventy-five mg. of radium with one mm. of lead for eight hours over the scalp; 100 mg. of radium for thirty-six hours over the neck glands. screened with one inch of wood and one mm. of lead.

Returned in six months. Scalp denuded and an eschar of dead bone one and one-half inch in diameter was found on skull. Little indication of healing, but there is no return of the growths. Gland in neck about the size of a pea. Patient is feeling very well and there is no evidence of any general metastasis.

I report these cases especially to show that radium seems to have some beneficial effect on malignant melanoepithelioma. I do not believe that either of these will live for any great lenth of time, but I feel as tho their span of life has been increased considerably by the use of radium.

I think we should divide cancer of the lip into three groups. Group one are those cases which do not involve the mucous membrane, but are confined exclusively to the dermis. Group two involves the dermis and extends into the mucous membrane. Group three are those cases which involve only the mucous membrane. Those in group one, I believe are adaptable to radium treatment. Those in groups two and three I think, where possible, should be operated upon. In most of these cases one can remove a large V without causing very much deformity of the lower lip. Even in the very large growths, an aplastic operation can be performed by going into the cheek on each side. All of the lip operations should be followed by raying of the submental, submaxillary and cervical glands. The submaxillary and submental glands should then be removed, even tho they do not show any involvement.

I have seen two cases that emphasize this important fact.

Man, aged 62, eighteen years ago had cancer paste used on lower lip for small growth. No evidence of recurrence on lip, but six months before coming to the clinic had noticed a lump beneath the chin which developed rapidly. At present his submaxillary, sublingual and cervical glands are involved and broken down.

Man, aged 65, growth on lip. Had same removed by arsenical paste, seven years before local recurrence. Four months ago lump began to develop beneath the chin. At present all t glands are involved. Next to silver nitrate I believe arsenical paste does more to stimulate cancer than any other known agent.

So far as I have reported only malignant cases, but radium is very effective in many nonmaligant conditions. Clagget[7] has used radium on thirty-two goiter cases and reports very satisfactory results in twenty-eight instances. Personally, I have treated only four cases.

Case 3. Woman, 37, school teacher, comes on account of enlargement in neck. Has been very nervous and unable to follow her profession for the past two years. Has lost five pounds in weight and sleeps very poorly. An examination shows moderate enlargement in the neck, positive eye finding, pulse 160, basal metabolism plus 146.

The goiter was divided into three divisions. Fifty mg. of radium for two hours was used over smallest lobe, screened with one inch of wood and one mm. of lead. Over two larger areas seventy-five mg. of radium for three hours with the same screening. Patient returned in three weeks with pulse 150, basal metabolism plus 41. The same amount of radium was again given. She returned again in two months, pulse 85, basal metabolism plus 6.

Clagget suggests the reason for using radium in goiter cases is that the tunica intima is very susceptible to the radiation ray, eventuating in an endarterites. Also, it is well known that new cells or diseased cells are more susceptible to radium than are normal cells. Working on this theory he has treated the toxic type of goiter for in it we have a vascular gland, containing many new and diseased cells.

Case 4. Baby, age seven weeks, comes on account of large growth on left temple. Child has had two severe hemorrhages since birth, and growth has grown very rapidly in last ten days. Examination shows a growth of about half the size of a small orange, bluishly discolored and dented in the center by scar, which was formed by previous hemorrhages.

This child received 25 mg. of radium, pushed into the mass by making an opening into growth and working thru the normal skin with a hemostat. The radium was left in place for five hours. This was repeated at various intervals from six weeks to two months. Mass had entirely subsided when baby was nine months old. There is very little scar. I have had seven of these cases and all are responding equally well.

In infants port wine stains can be easily removed without any ill effects, but I have found the white scar in adults nearly as unsightly as the stain itself. The skin is thoroly pigmented.

Case 5. Cataract. Woman, age 52, first noticed diminishing of vision three months before consulting me. Says she has watched the town clock and finds she has had to walk nearly a block nearer in past three months in order to tell the time. Examination, vision in left eye 20|100; vision in right eye with glasses, 20|25.

Fifty mg. of radium for two hours on four successive days was used, screened with three-fourth inch of ordinary dental modeling compound, shaped over an artificial eye, into which I imbedded one mm. of brass. This treatment has been repeated at intervals of six weeks or three months. During the past year she has had five treatments. After first treatment her vision, left eye 10|200 and right eye vision 20|20 with glasses and very little increase in opacity.

Cohn and Harris[8] have reported thirty-one cataract cases, where radium has been used, 84.3 per cent showed a change for the better, ranging from 3-4 letters on test chart to complete disappearance. Franklin and Cordis[9] report eighteen cases.

The conclusions I have drawn from my three years experience with radium are:

1. Where surgery can completely remove the primary growth, it is the method of choice. However, I believe it is good surgical judgment to ray the adjacent lymphatics before and after surgery.

2. In inoperable cases and in melanoepithelioma radium in many instances gives long periods of comfort and greatly prolongs life.

3. Make sure you are not treating a cancerous condition before you use the caustic.

4. In many nonmalignant conditions it gives us cosmetic results not possible before the advent of radium.

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INDICATIONS AND CONTRAINDICATIONS FOR TONSILLECTOMY FROM AN INTERNIST'S POINT OF VIEW*

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The title really includes the whole matter of focal infections—a vast subject. I shall, however, merely point out some of the disorders chiefly benefited by the removal of focal infections, and when such removal is likely to prove harmful or of little worth.

More and more as the years pass are diseases, formerly called constitutional, found to be of bacterial origin. Even now many of the disorders classed as metabolic are in their last analysis infections, as diabetes in its etiologic relation to pancreatitis, and diabetes insipidus so often due to infections in the region of the posterior pituitary lobe.

Since von Behring discovered diphtheria antitoxin in 1890, there has been, I believe, no greater advance in medicine than the discovery of the etiologic role of focal infections in general disease. This knowledge has been chiefly disseminated by Billings and Rosenow in this country.

What I have to say about the tonsil will usually apply to infections in the sinuses, teeth and gums. The most menacing focal infections are those in confined space in filled teeth and sinuses, and in tonsils scarred by disease or imperfect surgery. Here hematogenous infection is most prone to occur, while there is less danger in infected tonsils, in which free drainage may take place into the mouth. For this reason more benefit is usually attained in adults by removal of teeth than tonsils.

How may we be able to diagnose infected tonsils? This is a matter of personal judgment and there is no certain method of diagnosis. As we all know, there are tonsils which only show deep infection and abscess when opened after removal. Size has no relation to infection. The average infected tonsil is one just visible on casual inspection of the throat. The chief factors in diagnosis of tonsillar infection are history of repeated inflammation, the expression of caseous of purulent matter from the crypts, the presence of much fibrous tissue with adhesions to the pillars, and enlarged glands at the angle of the jaw, especially in children. But a little more than half of all cases of infected tonsils give a history of tonsillitis. Tonsils may be secondarily infected by infective discharges constantly bathing them from the nose, sinuses, carious teeth or pyorrhea, and in such cases tonsillectomy should follow removal of the primary focus, or more harm than good may result.

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Now to enumerate some of the disorders in which tonsillectomy has proved of value. Beginning with the skin, in my experience, erythema nodosum stands out before all other skin lesions in its relation to acute tonsillitis and in its cure by tonsillectomy. In some patients I have known the lesion to follow acute tonsillitis on several occasions. The streptococcic origin of at least one type of erythema nodosum is now acknowledged by dermatologists. In protracted cases of erythema nodosum tonsillectomy may be rapidly curative but one should defer the operation until three weeks or more after the subsidence of acute tonsillitis.

If I were to be asked what condition above all others is more likely to be cured by tonsillectomy or tooth extraction for focal infection I should say muscle pain about the shoulders and neck, and in the arms. A patient comes complaining that he cannot sleep for pain about the neck, shoulder, and often running down the arm, and he may even carry the arm in a sling. The condition is one of myositis, and so-called neuritis, and may be equally relieved by removal of the infected teeth or tonsils. I have had patients, in whom the condition was first cured by tonsillectomy and, in later years, a recurrence relieved by tooth extraction. The removal of focal infection is almost a sure cure for this condition.

In rheumatic iritis the removal of focal infections is indicated. One should rule out diabetes and syphilis. It may be objected that rheumatic iritis tends to natural resolution. But focal infection should be removed to prevent streptococcic invasions elsewhere, as well as to avoid recurrence of iritis. In children enlargement of the cervical glands at the angle of the jaw is often cured by removal of infected tonsils, providing the glands are not tuberculous.

Coming to the chest one first thinks of focal infections, and especially tonsillar infections, in relation to the heart. In the young one can almost exclude dead teeth. Long ago the clinical sequence of tonsillitis, rheumatism and endocarditis was observed and described. Chorea has a less definite chronologic, but not less etiologic, relation to tonsillitis. It may precede or follow rheumatism or endocarditis but belongs in this associated group of streptococcic infections usually arising from tonsillitis. It is generally conceded that damage to the heart or joints is due to repeated rather than to a single invasion of streptococci into the tissues. To prevent progressive damage in endocarditis or arthritis it is advisable to remove focal infection.

But tonsillectomy should not be done for several weeks after acute tonsillitis, nor in acute rheumatism or acute chorea. In fact removal of focal infection in chorea is not curative and is only done to prevent joint or heart complications.

It is not unusual to observe endocarditis in the young following tonsillitis, and often acute rheumatism, with enlarged heart and systolic murmur. After removal of the tonsils and general care the heart in such a case may in time become perfectly normal by preventing repeated infections. Unless stenosis of the valves occurs, the damage is slight. So that in most instances removal of infected tonsils is advisable in chronic streptococcic endocarditis or arthritis. But in advanced cases with failing heart, where the structural damage is great, tonsillectomy is senseless and harmful. For instance, the operation was recently advised in case of aortic disease of thirty years standing, at a time when there was complete failure of the heart with dyspnea, Cheyne-Stokes breathing, greatly enlarged heart, and engorged liver. The patient was slowly dying and tonsillectomy might have killed him. There was no history of tonsillitis.

So with arthritis. While no disease is more apt to be improved by removal of focal infections, yet the amount of damage done to the joints and the condition of the patient must be our guides. The x-ray is our best criterion. If there are actual changes in the bones, improvement from tonsillectomy is improbable whereas, notwithstanding great disability and swelling of the joints, the outlook is favorable for improvement or cure, following removal of focal infections, if there is no bone involvement.

Cure or improvement resulted in 70 per cent of 200 cases of severe arthritis at the Mayo clinic, where there was no actual bone involvement, as shown by x-ray. The advanced and chronic cases of so-called deformative or rheumatoid arthritis in the middle aged or over are usually harmed by tonsillectomy. There may be an immediate exacerbation of joint trouble, following tonsillectomy, but this is a favorable happening.

Bronchitis and asthma may be occasionally benefited by removal of infected tonsils, more especially in children. I do not recall a cure of asthma in an adult but I have seen patients much improved by the operation.

There is a very serious lesion in the lung, often resulting from tonsillectomy-abscess. This practically never occurs with local anesthesia. General anesthesia is responsible for it by leading to aspiration of caseous material from the tonsil into the lung. Abscess occurs on a average thirteen days later. I have seen a number of lung abscesses following tonsillectomy, and one case of lung infarct from embolism on the day of the operation. Tonsillectomy is contraindicated in adults, therefore, under general anesthesia. This does not apply to children, an abscess under twenty being rare. The effete East is still practicing general anesthesia in adult tonsillectomies but it will see the light, even if from the sunset in our West. Extraction of infected teeth is also liable to produce lung abscess, if done under general anesthesia.

I feel that tonsillectomy may prevent pneumonia. This may seem rather far-fetched, but I have seen three cases of streptococcic pneumonia directly follow tonsillitis. Pneumonia occurred twice in a year in the same subject in one instance. Tonsillectomy, in one of these patients, I hope will protect from further attacks. I have seen a patient who has had seventeen attacks of streptococcic pneumonia in as many years, apparently from a permanent focus of infection.

From the chest we next turn to the abdomen. We all know the etiology of gastric and duodenal ulcer, cholecystitis and appendicitis, as worked out by Rosenow in reference to focal infections. Just how much may be counted on in the way of cure by removal of focal infections it is impossible to say. I do believe, however, that in any routine medical treatment of ulcer focal infections should always be removed. As we have no medical treatment for cholecystitis, with apologies to Lyon, we have to rely wholly on the removal of focal infections in early and mild cases.

Tonsil and tooth infections not infrequently cause nephritis. Pyelitis and pyelonephritis follow acute tonsillitis often enough to point to their origin. Recent experiments at Rochester show that twenty-seven rabbits, injected with streptococci from dead teeth in subjects of pyelonephritis, developed nephritis in nearly 90 per cent. Five out of six cases of pyelonephritis had infected teeth. The rabbit nephritis occurred as localized necrotic areas, not as a diffuse nephritis. The former classic pathologic types of nephritis have now been abandoned because they represented end results. The pathogenesis has been for a long time uncertain. It is safer to diagnose an atypical inflammatory kidney lesion as a nephrosis, in many cases, thus sidestepping a pathologic diagnosis. More and more are kidney lesions shown to be infections, even calculus which may be quite uniformly reproduced in animals by streptococci from human urine, associated with the stone.

I believe that most if not all forms of nephritis will prove to be of bacterial origin. I can recall a number of patients, in whom chronic nephritis followed within five to ten years after severe attacks of pyelitis or pyelonephritis. Chronic forms of nephritis are probably due to repeated infections, occurring over a long period of time. The common finding of colon bacillus in urinary infections is misleading, as recent research seems to show the colon bacillus to be often a secondary invader.

For these reasons focal infections in the teeth or tonsils should always be removed in various types of nephritis, providing the case is a suitable one. As in advanced cases of heart or joint disease, one should use common sense in advising tonsillectomy or tooth extraction. The removal of more than three or four teeth may cause serious local or general reaction and even death. Even in cases where no renal disease previously existed, the extraction of infected teeth has caused nephritis from stirring up of the focus and hematogenous infection.

Clinically we see a group of patients of middle age or over in whom neurasthenia is the prodominant condition. Men who, since childhood, have never known a sick day in their lives, become weak, despondent, unable to work and say they are "breaking up or down." They often get no relief after prolonged general treatment for neurasthenia. In this group abscessed teeth are usually the cause and, when removed, the curative result is often magical.

To summarize the contraindications for tonsillectomy, I should say that tonsillectomy is contraindicated in acute infections, either general or of the tonsils; that removal of the tonsils in tonsillitis secondary to nasal or oral infections is contraindicated, unless the primary focus or foci are also done away with; that tonsillectomy is also unwise in chronic diseases, as arthritis, nephritis and endocarditis, where the patients are in terminal stages, unfit to stand shock, and where structural changes are so great that even arresting their progress would be of no avail.

Also tonsillectomy is contraindicated under general anesthesia in adults, where it can possibly be avoided. The advisability of tonsillectomy in any given case depends upon the judgement of the physician, and that depends upon his common, or rather uncommon, sense, if he is an able, experienced clinician.

TEETH AND TONSILS AS A SOURCE OF DISEASE*

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During the past few years a term that has been much employed by the medical and dental professions is focal infection. A study of medical and dental literature will show that many of the aches and ills of the human body are attributed to the escape of infectious material from such foci. Since the teeth and the tonsils have been found to be the most common location for foci of infection, much more attention is now being given to the condition of the mouth than formerly, and oral sepsis and oral hygiene have become very live subjects for discussion.

The theory of focal infection is not new. Benjamin Rush over one hundred years ago reported the cure of hip joint disease by the removal of a tooth. Virchow, in 1870, discussed the question and demonstrated its occurrence. In 1910 Hunter delivered his memorable address in Montreal. He stated that in his experience almost all of the germs to which our human ills are due are admitted by the mouth or nasal passages and that our systems are attacked by the products of oral sepsis.

But the theory of focal infection was carried to the peak of popularity thru the contributions of Billings, Rosenow, Hartzell and others, brought out about seven years ago. They demonstrated by their extensive clinical and experimental work the importance of septic foci as sources of chronic infections conveyed by the blood stream. It was shown that under certain conditions the streptococcus viridans becomes aggressive and migrates, developing a selective action which varies in affinity for different tissues of the body, and it was proved scientifically that this organism is the cause of many of the most serious systemic infections, especially those involving the heart, the kidneys and the joints.

With focal infection, as is usually the case with new discoveries in the field of medicine, undoubtedly the pendlum swung too far. In the words of Connell[4], "it is of course certain that the subject was overestimated at the onset, and equally certain is it that there is a very great deal of truth in the underlying principles of focal infection."

Dental pathology may produce a detrimental action upon the body which may be either local or systemic. The three most common pathologic conditions affecting the teeth are (1) decayed teeth with decomposing food, forming unsanitary mounths, (2) diseased pericemental tissues, (3) pulpless and infected teeth.

Concerning the first Fones[5] states that great prevalence of the unsanitary mouth can not be overestimated, or the picture overdrawn, as barely fifteen per cent of our people use a toothbrush. The result is that the average mouth shows inflamed and congested gum tissue, broken down and decayed teeth and decomposing food debris. The presence of such an immense number of bacteria affects the tonsils, the pharynx and the gastrointestinal tract. The toxic influence of unclean mouths is especially noticeable in children, frequently producing headache, malaise, dizziness, imperfect vision, slight fever, diarrhea, and a general condition of malnutrition. At that, these conditions are not as important as the systemic infections which may result and are frequently produced by the actual penetration of the bacteria thru the mucous membrane of the tonsils, the pharynx and the intestines.

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Diseased pericemental conditions have long been suspected as the cause of systemic disease by dental pathologists. Fones states, and clinical and experimental evidence seems to show, that systemic disease is produced by pyorrhea alveolaris in three ways: (1) By the constant exudation of pus in the mouth and thence into the digestive tract, (2) by the absorption by the lymphatics of the bacteria and their toxins present in the deeper areas of the infected tissues, (3) by the pumping action of loose teeth in their sockets during mastication, forcing bacteria and their toxins into the capillaries and thus into the circulation. It has been estimated that the gingival borders of the gums present an area eight times greater than that of the crypts of the tonsils. This fact emphasizes the importance of pyorrhea alveolaris as a potential source of systemic infection, inasmuch as Noyes has definitely demonstrated presence of a network of lymphatics in the pericemental tissues, even to the extreme borders of the gingiva.

The third pathologic condition affecting the teeth is that of apical infection. These infections are found only on pulpless teeth and are, as a rule, insidious in their action because of the streptococcus viridans producing no local soreness, pain, inflammation or pus. They are revealed only by the x-ray. In the words of Rosenow[14], "infections of a dental pulp, pulpless teeth and apical abscesses are theoretically the most dangerous of the various forms of dental foci. They are usually free from symptoms and hence unsuspected. They are situated in the osseous tissue, which allows no expansion. They lack drainage other than into the circulation, and are exposed to pressure transmitted by the teeth during mastication. They remain active and do not heal for a period of years, and the bacteria are not encapsulated, as is usually assumed, but are found in areas of active inflammatory reaction, where new blood vessels form and afford ample drainage into the circulation."

Black examined six thousand dental radiographs of six hundred unselected adults. Seventy-eight per cent of the six hundred adults examined were shown by the roentgenograms to have definite areas of bone destruction about the teeth; 13 per cent of the group between the ages of 20 and 24 had peridental infections. This percentage rapidly increased with the age of the individual. Of those over 50 years of age 88 per cent had peridental infections; 9 per cent of all teeth having good root-filling were abscessed, while 63 per cent of all teeth having poor root-filling were abscessed.

Jones and Gardner[12], on the dental examination of fifteen hundred consecutive patients observed at the Mayo Clinic, found that only 12.3 per cent were without infected teeth; 87.7 per cent had one or more infected teeth (apical, pyorrhetic); 80.1 per cent had pyorrhea; 94.7 per cent of the patients with ear trouble had infected teeth; 84.2 per cent with ear trouble, 84 per cent with neuritis, 83.7 per cent with stomach trouble, had pyorrhea.

Gilmer and Moody[7] were the first to determine the types of infection around apical root ends. In 1914 they published their investigation, covering some forty odd bacteriologic examinations of material from acute, subacute, chronic or latent infections of the jaw or teeth. They found the predominant organism to be a streptococcus, a hemolytic streptoccoccus in the acute abscesses, and streptoccoccus viridans in the chronic. They found these organisms, especially in the streptococcus viridans, will grow as well anaerobically as aerobically.

Hartzell[9] a few weeks later published his investigations covering the examination of 162 apical abscesses, 150 of which yielded positive cultures, and 12 of which were sterile. His results agreed with those of Gilmer and Moody.

Henrici and Hartzell[10] recently reported the results of some investigations which are very interesting, and may have a far-reaching effect on medicine and dentistry. They found living bacteria in a large number of living tooth pulps. In no case could they find bacteria in the pulps of teeth which were fully normal, i. e., unaffected by caries or pyorrhea, but in those teeth which were affected by caries, pyorrhea or both, 42 per cent to 46 per cent of the pulps were infected, the most common organism being the streptococcus viridans. One hundred and fifteen vital pulps were examined. They sterilized the outer surfaces of the teeth, cracked them open and examined the pulp for bacteria. In regard to their startling claims, they say: "If our observations are correct, we must conclude that in approximately one-half of the number of vital teeth, invaded by caries or surrounded by pyorrhea, the pulp is already infected by streptococci, a conclusion so startling that we feel some hesitation about placing our work on record at this time. Nevertheless we can find no fault in our technic, supported as it is by a series of twenty-two normal controls with uniformly negative results." If it should be proven that bacterial invaders frequently gain entrance to the pulp of the teeth, seriously affected by caries or pyorrhea, it may come to pass that our present conceptions of pulp conservation for such teeth may undergo a radical change. The time may come when we will prefer a well-filled sterile root canal to one that is filled with infected pulp.

In childhood the mouth acts as a gateway to infection in three ways according to Noyes[13]: (1) By way of the lymphatic channels leading from the deciduous teeth to the submaxillary lymph glands and thus to the lymphatic glands of the neck, (2) by the presence of streptococci around the roots of the teeth, which is conveyed by the blood stream to other parts of the body, and (3) by furnishing opportunity for the entrance of the germs of acute fevers of childhood.

That there is a definite connection between the lymphatics of the deciduous teeth and the submaxillary lymph glands was demonstrated in 1909 by Sweitzer, of Berlin, who succeeded in injecting lymphatic vessels in the dental pulp. Dewey, in 1914, succeeded in injecting the lymphatic capillaries of the submaxillary lymph glands of the neck with injections thru the pulps of the teeth.

The systemic conditions in childhood and youth, which have their origin in the teeth and tonsils, are caused mainly by caries of the deciduous teeth and of the first permanent molars. These conditions consist mainly of cervical adenitis, tuberculous adenitis, endocarditis and muscular rheumatism. In adults the conditions involving the teeth consist principally of infections of the apices and dental pulps, and of pyorrhea alveolaris. In these conditions the bacteria, which produce the local pathology in the progress of condition, are progressively altered in such a way as to adapt them to the environment of other parts of the body to which they are transported by the blood stream.

The advent of the x-ray as a diagnostic aid in the examination of teeth demonstrated the frequent development of granulomata and apical infections which otherwise would have remained unsuspected. There is a tendency to overexaggerate its apparent findings. But the medical and dental professions are rapidly coming to the point where they will be able to place the proper estimate on the relation of radiographic findings to clinical observations.

Tonsil pathology may have a profound influence upon the body. The tonsils, situated at the threshold of the alimentary canal and being composed of lymphoid tissue, are particularly susceptible to infection. Wilson[20] states: "The ring of Waldyer is the most vulnerable part of the body and the faucial tonsils the most frequent seat of inflammatory attacks." Shambaugh[18] says: "The most important focus in the causation of the chronic systemic disease appears to be the faucial tonsils, which cause more trouble than all the other foci together. The reason is not difficult to find. The faucial tonsils are more frequently the seat of severe, acute infection than is any other organ in the body. It is rare to find an adult who has not experienced one or more attacks of acute follicular tonsilitis. The tonsils with their deep pockets are admirably suited to retain latent foci of infection, capable of causing the most serious systemic trouble."

Beck[1] states: "The size of the tonsil has nothing particularly to do with the amount of infection that may be within it, and a small tonsil may be more injurious to the individual than a large one."

The size of the tonsil has nothing to do with the removal; the dangerous tonsil is the submerged one and the one that has had several previous infections. Pathologic changes have oc curred in the crypts, drainage is interfered with, and then we get absorption.

Tonsilar infections are particularly apt to cause arthritis, heart and kidney lesions, tho the list of systemic diseases which may have their origin in the tonsil is extensive. Smith[19], in his very recent work on heart affections, states that the diseased tonsil is always a potential and sometimes an actual cause of endocarditis. If the tonsils are chronically inflamed or frankly diseased, they should be removed. The chronically inflamed tonsil is the one likely to cause endocarditis.

Gordinier[8] recently reported two typical cases of exophthalmic goiter permanently cured, after one year of observation, with the rest cure and the enucleation of diseased tonsils. He states that Morse was able to cultivate streptococcus viridans from the thyroid glands removed from two typical cases of goiter. Bell[2] believes a very large proportion of thyroid disturbance is caused by mouth and throat infections. The frequent occurrence of appendicitis, at times in epidemic form, when throat infections are particularly prevalent, is really understood in the light of Rosenow's[15] experiments which would show that appendicitis, in the absence of foreign bodies, commonly is hematogenous, secondary to some distant focus.

It is not the purpose of this paper to offer clinical evidence as to the part the teeth and tonsils have in the production of disease. The evidence is overwhelming and the literature abounds with data. Deductions from your own clinical experience have already undoubtedly convinced you as to the soundness of the theory of focal infection.

What shall be the course of action in the event of the discovery of the focus of infection in the teeth and in the tonsil? Which focus shall be removed first? Rosenow[16], referring to this point, says: "In the matter of eliminating foci of infection in the mouth and throat, the infections about the teeth, as a rule, should be corrected first. Tonsillectomy, as now commonly practiced, before the condition of the teeth has been corrected, is illogical. The lymphatics of the mouth and jaw drain into the tonsils. Some infections of the tonsils improve or even disappear, following extraction of infected teeth."

DeSchweinitz[17] discusses this point as follows: "Personally, I can not understand why an infected tonsil should remain, or why both the offending teeth and the tonsils should not be corrected. If I had to dictate the precedence of action, because I have more often apparently found a cause of iritis resident in the tonsil than in the teeth, I would be inclined, first, to eliminate the tonsils, but I would remember the teeth in later action if necessary."

The question of the relation of the dietary to oral conditions is an exceedingly complex and fascinating one. The possible role that the accessory food factors, the so-called vitamines, may play in the etiology of deficiency disease, has attracted the attention of many scientific investigators in the medical profession. Howe[11] very recently claims to have obtained rather extensive effects in the teeth, in the alveolar process, and in the jaws themselves, by feeding vitamine deficiency diets to guinea pigs. The teeth were regularly decalcified and distinct caries appeared in some cases. Conditions closely simulating pyorrhea alveolaris were produced. Upon resumption of normal diet calcification returned, the teeth became firm and pyorrhea disappeared. He states that tooth destruction is one of the first signs of lack of vitamines in diet. To say the least, Howe's findings are startling. If his experiments and findings can be verified by sufficient confirmatory experimental studies, it is quite possible that the long mooted question ot the etiology of dental caries will be nearer solution.

Oral hygiene is becoming a very large issue in health and educational circles. Some of the larger cities, recognizing the importance of oral hygiene in its relation to the health of the community, have established clinics for the prevention of mouth disease. The educational and preventative dental clinic in the Bridgeport schools, and the Forsythe Dental Infirmary of Boston are leaders in this work. Fones[6] states that in the Bridgeport Clinic a reduction of 33.9 per cent in dental caries was proven in the teeth of children carried to a five-year dmonstration. In some schools reduction in dental caries was as high as 67 per cent.

In conclusion, it is apparent that a closer cooperation between the medical and dental professions is required, if the problem of oral sepsis is to be solved and oral hygiene is to be properly established as a public health measure. The recognition and removal of chronic foci anywhere in the body is imperative, as a prevention of progressive poor health. Emphasis should be made of chronic alveolar abscess, often unrecognized by the patient. A pathologic tonsil is a menace and should be wholly removed. A sane, conservative, rational policy must be observed in the treatment of these foci of infection. This will lead to a longer average duration of life, and will make for the prevention and cure of acute and chronic disease.

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DENTAL INFECTIONS FROM A MEDICAL POINT OF VIEW*

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The highway of search for focal infections is beset with many surprises, pleasant and otherwise, many pitfalls and disappointments; in no place is this so evident as with focal infections of the teeth. While there are numerous other foci of infection, the present paper refers particularly to those of the teeth and adjacent tissues. Some ascribe everything in human pathology to the source of dental infection and not without good reason; others claim that the stress laid upon this subjct is greatly overdone. Some very noted clinicians turn rather a deaf ear to the whole matter, and give little credit to the dental staff of the clinics with which they are associated. Others, of the opposite turn of mind, have done and are doing really marvelous work along this line.

That focal infections play such an important role in minor and major conditions became strongly impressed upon me at Savenay, France, where practically all of the sick from the various A. E. F. institutions were evacuated to the states. Here a positive and final diagnosis was required to be made before a patient was allowed on ship; no such diagnoses as rheumatism, chronic bronchitis, pleurodynia, neuritis or arthritis (without causative factor) were permitted. Thanks to a most excellent x-ray laboratory, our search for foci in a great majority of cases was of short duration and "infected lies the tooth that wears a crown" straightened out the status of a multitude of "gold-brickers" (malingerers and slightly disabled) and severer disabilities of cryptogenic origin.

That a low-grade chronic infection in any part of the body is capable of producing symptoms of varying degrees from the mildest to the most severe has been known and considered almost from the advent of bacteriology; the modus operandi thereof has become, possibly, more clarified by the more recent advent of physiologic chemistry, especially along the lines of protein metabolism, protein sensitization, acidosis, produced by toxins and disturbed metabolism.

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Consider, for instance, the facility with which an attack of asthma or urticaria may be precipitated, and that the most violent attack of hay fever, with all its distressing symptoms and signs, may be initiated by only two or three granules of pollen (estimated that 20,000,000 pollen grains weigh a gram.). It takes no great flight of imagination or theorizing to contemplate a similar result from the toxic proteins of septic foci, which are being *constantly* absorbed into the system either directly into the blood and lymph channels or thru the gastrointestinal or other tracts.

The frequency of foci of dental origin is well shown by the work of Black[1] who, from an analysis of 6,000 films, found chronic infections about the teeth in the following proportions: 57 per cent. between the ages of 20 and 24; 64 per cent from 25 to 29; 88 per cent. from 30 to 39; 90 per cent. from 40 to 49; 98 per cent. past the age of 50. Considering such a common, prevalent source of infection and synchronous percentage, one can hardly see enlarged joints, muscles and joints which are constantly (especially with barometric changes) painful, chronic conditions of the the nose and throat, inflammation of the eyes, a true arthritis, gastrointestinal symptoms or albuminuria (which means primary systemic protein disturbance, rather than a nephritis), without looking askance at a crown or other questionable teeth and referring his patient to a competent roentgenologist or dental surgeon.

Murphy[2] some years ago stated that the time was not far distant until such terms as "rheumatism" and "gout" would be employed no longer. His prediction is being well fulfilled. This nomenclature is rapidly approaching that of "internal measles," to be used only by the tyro and will disappear entirely among real medical men as methods of ferreting out foci of infection improve. Leary[3] says it is now conceded that oral infection may be the cause of rheumatic attacks which in the past were attributed to uric-acid diathesis, autointoxication, internal secretions or anaphylaxis; further, that focal infections from the roots of devitalized teeth are among the most certain, frequent and insidious underminers of health for the following reasons: (1) They occur without giving rise to any local pain or discomfort; (2) they may be present about the roots of teeth which suposedly have been well filled; (3) their presence is usually revealed only accidentally or intentionally with the x-ray; (4) often their presence about the roots of septic teeth may not be revealed by the x-ray; (5) the effects of these local infections are remote from their origin both in time and place, and there is no apparent connection between the two; (6) hardly a person over twenty-five years of age, who has had dental treatment in which the pulp has been involved, is without one or more of these apical infections; (7) these infections are most puzzling to the oral surgeon and require his most skillful efforts to eradicate them.

From the work of Billings, Rosenow, Woodyatt[4]: "To the long list of 'metabolic' diseases already eliminated by these workers must be added gout; in five patients—four men and one woman—falling strictly within the textbook type of the disease (nocturnal big toe attacks, urate tophi, susceptibility to nucleoprotein feeding, etc.) badly infected teeth were observed in all. Two have recovered absolutely since losing their teeth; a third who would develop 'gouty' attacks whenever his teeth were treated, is better; the remaining two still have their teeth—and their gout. May we not better regard these patients as suffering from embolic infectious arthritis with the urate deposits secondary thereto and analogous to the formation of 'stones' in infected gallbladders, kidneys or urinary bladders?"

Practically all skin diseases (aside from those of purely parasitical and bacterial origin), albuminuria, so-called chronic nephritis, toxemias, toxemias of pregnancy (with and without convulsions) have for many years been considered to be due to some form of perverted protein metabolism, by those who have really thought upon the subject. A very great number of startling results are reported from regulation of protein dietary, specific and non-specific protein therapy, vaccines and other proprietary fabrications, and the exhibitions of extracts of the thyroid gland, "the great thyroid metabolizer." In all treatises of goiter, especially of the exophthalmic type, whether medical or surgical, great emphasis is laid upon the removal of focal infections, especially of the teeth. The concurrent and proportionate increase in exophthalmic goiter thruout the world, with the increase in insertion into the oral cavity of excellent, permanent culture media and sources of toxicity, might at least suggest a possible relationship[5].

Possibly the most brilliant results are those of the obstetricians thruout the world, at maternity hospitals and in private work, as to the association of oral infections with toxemias and eclampsias of pregnancy. Tweedy, of the Rotunda Hospital, in 1911-12, reported about eighty cases of eclampsia, with results up to that time never dreamed of; since that time his theory and results have been amply verified. In turn, his work has incited the search for the cause of this perverted metabolism. Since focal infection anywhere means absorption of toxins, chronic infection is the most likely factor in breaking down the normal resistance to the burden of pregnancy. Loomis[6], investigating the dental conditions in pregnant women, found in 125 devitalized teeth, 103 of undoubted infection. He reports several cases of toxemia and eclampsia, in which occurred, following the correction of dental infections, an immediate drop of 30 degrees blood pressure, the disappearance of edema, albuminuria; also, several postpartum psychoses which quickly and completely disappeared by the same procedure. Valentine[7], Edinburgh Royal Maternity, in one hundred successive, non-selected cases, found all but two with dental infection, and reports a long series of cases wherein toxemic symptoms immediately disappeared upon proper dental care. He insists that it is the first duty of an obstetrician to see that dental caries and abscesses are removed at first consultation. Talbot[8] reports a long series of cases, with theories of toxemia of pregnancy and states: "Since May 10, 1917, the day on which this patient announced the result of the x-ray findings in her teeth, I have made observations on all cases of toxemia—97—occurring on my service at Worcester City Hospital and Memorial Hosiptal and in my private practice; in a series of cases up to March 1, 1918, I have been able to find evidence of chronic sepsis in the teeth in all cases without a single exception."

Steadman[9] states that the condition of pale-faced, tired-looking, under-weight and mentally inefficient children, usually attributed to semi-starvation and poverty, is really due in a very large percentage of cases to carious deciduous teeth and first permanent molars, exposed and putrescent pulps. Abscesses about the teeth are etiologic factors, and the extraction of teeth is followed by restoration of health. Oral sepsis will aggravate any existing disease or anemia, and locally spread to adjacent tissues, causing pharyngitis, tonsilitis, otitis media, sinusitis, etc.

A few cases of my own, in brief, are interesting:

1. Adult, male, aet. 34; treated over two years for a most violent eczema. For eighteen months confined to bed totally disabled, in agony at times not even relieved by morphine. Came to me Aug. 25, 1920, with one of the most marked, generalized, oozing, crusted, bleeding skin conditions one can imagine; so bad on arms that tattoo marks thereon were undiscernible. Improved somewhat under local and constitutional treatment; averse to believing that teeth could have anything to do with his condition. Upon insisting, x-ray taken of teeth, there being no other demonstrable focus. Films showed many points of infection, and on Sept. 25, upper teeth were extracted, followed by removal of much necrotic tissue of foul odor. Quite a severe reaction for a few hours, but the following day he bounced into my office, saying he felt better than he had for years. Four days thereafter his skin lesions had practically disappeared. Teeth have been treated since that time and there have been mild recurrences following each, each in turn being milder than the preceding. During past ten days there has been hardly any evidence left and patient is now working for the first time in over two years.

2. Adult, male, 39 years. In France "all broken down and didn't pick up after the flu." Discharged from service Aug., 1919. Treated by "specialist" as tuberculosis, totally disabled. Reported to me May 29, 1920. sick, pale, no temperature, his chief complaint being pains in chest, both sides, weakness, loss of weight, cough every morning with some sputation. Physical condition showed no evidence of tuberculosis, but x-ray revealed all of his teeth badly infected, with numerous abscesses. Complete extraction of teeth followed by removal of necrotic tissue, Aug. 2. Reaction moderate and in hospital sixteen hours. Next seen ten days thereafter, with report that "I have felt better and done more work in the past eight days than in the past eighteen months." Has continued to improve and has been in active physical work since Sept. 1.

3. Adult, male, aet. 30. In hospital April 1, 1918. Sore throat and all run down. Did not recover; discharged from service May 15, 1919, poor physical condition. Treated in O. P. D. of two Philadelphia hospitals until July 29, 1920, when he was diagnosed tuberculosis and advised to go west for his health. Reported to me in August, saying he had tuberculosis. No evidence of pulmonary tuberculosis at that time, but found a most marked pyorrhea alveolaris. Returned to his home without dental treatment. On Oct. 7 again reported to me with severe antrum trouble, eye swollen shut, greatly swollen cheek, temperature 101 degrees, a very sick man. Referred to dental consultant, who extracted three upper teeth, which drained antrum, Oct. 8. No further dental work done. Now states that he

is in better health than for months, has gained fifteen pounds, and has been busting bronchos for past four weeks.

Alvarez[10] protests against the reckless extraction of teeth. In the enthusiasm of the theory of focal infections physicians have advised the wholesale extraction of perfectly good teeth with no thought as to how the patient would masticate his food and the evil results attendant thereupon. He states that the miraculous cures reported are often but temporary and the toothless patient again begins his rounds of doctors' offices. It actually appears that some physicians extract the teeth first and, if symptoms do not disappear, search for the cause thereafter. A thoro physical examination will, of course, reduce this fault to a minimum. Further, "in view of the fact that thoro removal of focal infection often fails to cure arthritis, let us be more honest and conservative with our patients and be careful in what we promise them; let us save serviceable teeth wherever possible; above all, let us do unto our patients only what we would have done unto ourselves if their teeth were in our heads."

A great deal of responsibility rests upon the dental surgeon in these cases of dental infection. Simply "pulling" (Burns[11]) teeth fails in most cases. Devitalized teeth, abscessed teeth, teeth badly infected with pyorrhea and pulpless teeth should be extracted and the whole infected area eradicated.

Nodine[12] sums up the matter in these words: "The dental profession has been raised to a higher plane by the recognition of the fact that oral infections have a definite effect upon the general health. The establishment of this fact was due in part to the more exact diagnosis resulting from the use of the x-ray to discover such infections. The public is demanding better dentistry and is placing its confidence in the dentist who employs the x-ray or other diagnostic agents to search for oral infections. The methods used by the dentist should be such that the development of foci of infection in the teeth and tissue upon which these methods are used will be obviated. When oral infections are discovered, they should be eradicated carefully and completely by surgical methods. The patient's present and future health is of primary importance, even tho its preservation may require the sacrifice of many teeth. The prevention of the conditions which make focal infections possible is the highest form of service the dentist can render."

Not unlike one's inability to recognize the familiar face of his own watch, it is seen so often, is the way in which dental infection is ordinarily received in routine examination by those who make a systematic physical examination, saying nothing of those who do even this little. The spongy, red gums, a few drops of pus, a discolored, insensitive tooth (even the golden test tube full of excellent culture media, anchored over a foreign body sticking into the jawbone) mean nothing, it seems, to some. This same drop of pus, if discovered exuding from an ear, a sinus, a fallopian tube, and quite commonly in some hands, even from the appendix, is hailed as a diagnostic triumph and radically dealt with instanter. The annual crop of several million tonsils will slowly but surely diminish, as we learn more of their function, together with the other lymphatic tissues of the throat and neck and, removed at its source, this constant stream of infective material with which they are bathed and have to battle continually.

Let us give the dental surgeon, with the proper knowledge of dental pathology, every assistance in hunting out these foci in every case, where there is the slightest suggestion of dental infection. Such a procedure will be a great source of pleasure and conviction to the physician, saying nothing of the real paramount issue, the health and comfort of the patient.

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THE PUPIL IN HEALTH AND DISEASE*

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The pupil is a part of the eye that is of prime importance not only as regards vision, but as a guide to diagnosis of local and general disease. The pupil is a portion of the ocular apparatus visible to the naked eye. The name pupil arises from pupus—boy, or pupa—girl, and probably arose from the miniature image of the observer mirrored by the anterior surface of the cornea.

When we talk about the pupil itself, we are really talking about nothing. It is simply a space, a hole in the iris, which in local disease may be blocked up or obscured by exudation or opacities of the media. There are thus no diseases per se of the pupil. When we refer to these, we consider chiefly the opacities back of the cornea, i.e., of the anterior and posterior chamber, the lens and the anterior portion of the vitreous. As remarked, it is an aperture in the iris which is of varying size, depending in health upon the conditions or life and of light, or the depth of color of the iris, or possibly the amount of pigmentation in the chorioid and upon the age of the person.

The pupil appears black to ordinary observation because the illumination of the fundus by direct light is not sufficient to show the depths of the eye and what light gets in is absorbed, not reflected. Albinos' eyes have a red pupil. Cats' eyes shine in the dark. "Her pupils were of the deepest black." We see such quotations in contemporaneous literature.

Ordinarily in bright light the pupils are small and expand in dim light and darkness to almost the rim of the cornea. Dark brown or deeply pigmented irides are usually associated with a larger pupil than light grey or blue. There are no such things as 'black" eyes. The color of the iris varies from light gray to blue or very dark brown. In childhood the pupils are usually larger and more active than in age. In old persons they may be contracted even down to pin points and yet be normal. By the latter, perhaps, a certain degree of accommodation or at least sharpening of objects is obtained by cutting off the divergent rays of light.

The position of this aperture is not exactly in the middle of the iris. It is normally a little down and to the nasal side, corresponding very nearly with the optic axis, being between the corneal axis and the visual center, about five degrees between these points in the emmetropic eye. In the case of myopia or hyperopia and meridional astigmatism, these relations are decidedly changed, hence the great differences in the angles alpha and gamma.

Birds and omnivera have round pupils. The felines have perpendicular, and the herbivora longitudinal shapes. The pupils of snakes and reptiles are oval.

The pupillary action, the accommodation and its consensual reactions are of special importance. Every doctor looks at the eye of his patient for almost any complaint. When the ciliary muscle accommodates to produce clear vision, it should leave the pupils equally contracted. The independent innervation of the ciliary muscle on the one hand and the iris on the other in certain conditions become disassociated. We, therefore, may have normal accommodation and normal pupil, or the opposite pupil contracted and fixed to light, or pupils dilated and fixed to light which contract when accommodation occurs. Its consensual reaction, i.e., of one eye to the other, is important as a stimulus diverging to the pupil centers on the one side; has nerves crossing to those on the other side, and harmonious and equal contraction occurs. Even where one eye is blind, where the associated nerve fibers are not affected, the pupil contracts when light is cast into the other eye, but not when light is put into a blind eye will that of the other contract.

The relation to the pupillary reaction in diseases of the spinal cord or the brain are of great diagnostic and prognostic importance and may be entered into later, as will also its relation to the dioptric media.

The entire sympathetic nervous system of the child and the youth is unstable as compared with the adult state. The structures of the iris are fairly resilient and hence there are quick changes in its action. In youth and adolescence the child lives in a world of make-believe, the imagination and the powers of inhibition are active, hence the relatively more dilated pupil. In old age, beside the dullness of the inhibitory functions, the iris being a vascular membrane becomes stiffened from sclerosis and hence its actions are slow and of not so great extent. Unstable functional nervous conditions, even tho they be unassociated with disease, show marked variations in the pupil.

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Finally, normal pupils are influenced by (1) light and shade, (2) accommodation, (3) sensory stimuli, (4) emotions, (5) sleep, coma and death, (6) drugs, either locally applied or internally administered, (7) diseases, especially cerebral spinal, nervous states and diseases, (8) various other conditions, (9) local disease and conditions of the eye.

In normal sleep there is ptosis, i.e., closure of the lids, due to inhibition of the action of the sympathetic to the levator palpabrae muscles. There is also contraction of the pupil from inhibition of the dilator muscles of the iris by reason of the same condition, but when the person is awake with the lids closed the pupils are enlarged on account of cutting off the light reflexes and they contract as soon as they are opened. If the person remains asleep, there is no appreciable action on the pupil. The same conditions obtain in coma and low grade of narcosis induced by anesthetics.

At the moment of death the pupils dilate, followed later by a partial contraction from setting in of rigor mortis, the pupil remaining mediumly dilated in what is called the cadaveric position, midway between the normal pupil and that of paralysis of the sphincter muscle of the iris. In narcosis by chloroform or ether the pupils are at first contracted, but at the moment of total loss of inhibition, which is a warning sign to the anesthestist, the pupils dilate.

The pupillary symptoms of disease are well marked and are distinctive. Of special interest are the effects produced on the pupil by local diseases. As remarked, the normal juvenile pupil is usually somewhat large and varies greatly in size. It is usually approximately round, but when fully contracted it will be seen that it does not occupy exactly the center of the cornea.

The effects of eserine, pilocarpine and morphine locally contract the pupil to a pin point. The same effect is also produced by adrenalin solutions, whereas atropine, scopalmine or homatropine and a few other remedies completely paralyze the constrictor muscles as well as stimulate the dilator muscles of the iris. These drugs taken internally produce the same result when sufficient of the medicine has been absorbed to affect the peripheral nerve supply of the iris.

The size of the cadaveric pupil is less than that produced by mydriatics, and that of the paralytic pupil, where the contractors and the dilators are not stimulated, is between these two. In a few cases the front of the eye is all pupil, i.e., where there is a total absence of the iris or an iridia.

The anterior chamber and area of the pupil may be filled or partly filled by transudates as hemorrhages, producing hyphema or by exudates as hypopion. During iritis exudates are thrown out and gum the margin of the iris to the anterior capsule of the lens, producing posterior synechia, which may be partial or complete, the latter being called exclusion of the pupil. All cases of iritis, no matter how little, if existing for several days will result in synechiæ. If the pupil can be fully dilated by atropine, these will be drawn away, leaving some of the posterior layer of the iris which is the pigmented layer on the anterior capsule of the lens. If the pupils be entirely filled up with exudated, they may form a dense membrane.

The pupil in glaucoma is usually moderately dilated and irregular, being commonly of an ovoid shape. There is sometimes a greenish reflex here to the edge of the iris and usually advanced, rendering the depths of the anterior chamber less, and in some cases the iris lies across Descimet's membrane. Transillumination of such an eye will show that the circumlental space is very much constricted, showing that the base of the iris is likewise pushed forward.

Differences in the shape of the pupil may be caused by traumatism, surgical operations, congenital affections and disease. Marginal or radiating tears of the iris or detachment of the base of the iris (iridodialysis) distort the pupil. In the latter the edge of the lens is distinctly visible. We may have several pupils (policoria). The latter condition also obtains in well developed rents of the iris and in a few congenital cases, where there are several pupils. Providing there be one hole in the iris in or near the visual axis, there seems to be little disturbance, altho in a few cases double vision may be found. Anisocoria, where the pupil is displaced, interfers considerably with the vision, as the visual line then passes thru a portion of the cornea which has a high degree of astigmatism. The optical zone of the cornea, in which lie the most perfected curves, is only about 10 degrees up, 10 degrees inward, and 10 degrees outward.

Congenital coloboma of the iris is always downward. It will be noted that the constrictor muscle and iris is intact to the bottom of the coloboma, whereas in a small iridectomy such as is made for optical purposes a segment of the iris has been cut away and with it the constrictor muscle, also the base of the iris may be demonstrable. In both cases the edge of the lens will show in a distinct line to ophthalmoscopic examination. In congenital colobomata the iris is also accompanied by a fissure of the lens, a coloboma of the chorioid. The latter is generally downward, altho a few cases are seen of isolated chorioidal colobomata in bizarre position. Associated with these congenital difficulties there is often seen capsular or nuclear cataract and, where occupying only the center of the lens, artificial pupil, i.e., coloboma optica may be made, but these congenital partial cataracts usually proceed in more mature life. It is really best to treat them by the dicission operation in youth, whereby we leave a round pupil, and by extraction in adult life.

Cataracts (from cataracta—a waterfall) are of two types, capsular and lenticular. Of the former may be a cataracta accreta, a deposit of connective tissue, usually congenital, and probably due to prenatal inflammatory processes or the capsule of the lens itself may be imperfectly developed or be partially opaque. The same condition obtains on the posterior surface of the lens. Some posterior polar cataracts are associated with persistence of the hydlud artery and the canal of Cloquet.

True lens opacities may be cortical, i.e., in the cortex of the lens, in the outer layers of the nucleus, or true nuclear cataracts, the latter being but seldom seen, as the so-called nuclear cataracts are opacities of the cortex about the nucleus and are degenerations of the lens from sclerosis of the fibers, fatty degenerations and air vacuoles. All these have been given various descriptive names. Punctate cataract and degenerations causing opacities, especially downwards and inwards, are of extremely slow progress and in some cases may be more or less resorbed and in these few, where treatment has been instigated, to such has been ascribed the vision thereby regained. But it is safe to say that, when the lens fibers have once degenerated, there is no replacement whatever and the degeneration usually proceeds to complete maturity. A note may be here made of the senile reflex of the cortex which is seen best in direct illumination, the lens, however, remaining perfectly clear.

In some cataract operations the pillars of the iris get caught in the wound drawing the pupil up. I have successfully restored good looking pupils by a section of the lower pupillary margin by subconjunctival incision with the Graefe knife.

Dislocation of the lens. Whether the clear lens or a cataractus one, the pupil is invariably distorted forward, forming an irregular oval. If back of the pupil into the vitreous edge of the iris, it is much deeper and we get a tremulous iris. A perfectly successful extraction of cataract in the capsule or the operation of Barraquer also leaves a tremulous iris. These irides, however, react to mydriatics and myotics.

The pupillary contents may be treated as extending from the cornea back to the macula. Opacities of the vitreous humor prevent clear vision. Congenital conditions, as persistent hyaloid artery with persistence of hyaloid canal, degeneration of the vitreous, varying from synchysis, formation of membranes as occurs in retinitis proliferans, also may be observed thru the pupil. Detachments of the retina and tumors may in favorable instances be seen likewise.

We have now gotten as far with conditions of the eye as can be diagnosed without the ophthalmoscope. Since its introduction in 1851, by Helmholtz, and particularly in the last few years ophthalmoscopic study has opened up a vast field, particularly of that portion of the eye in which changes are significant as to general disease; those affecting the retina, chorioid and optic nerve, which in the old days were called amblyopia and amaurosis, terms which signify partial or complete blindness and a field of which the old fellows were of necessity entirely ignorant.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington, Idaho and Utah
Devoted to the Interests of the Medical Profession of the Pacific Northwest
Editorial Office, 323 Cobb Building, Seattle, Wash.
MAY, 1922

EDITORIAL

BUNK IN MEDICAL PRACTICE

There is about as much sense in giving pink pills to pale people as in prescribing iron on the basis of pallor alone. There is no more common error than that of administering iron to patients because of pallor of the skin and mucous membranes, without estimating the percentage of hemoglobin. "Pale people are common, but anemia is rare." Pallor is commonly due to living or work indoors in a high temperature. In the tuberculous, neurasthenic and aged pallor is frequent without anemia.

What shall be our criterion for anemia? In one of our great clinics any percentage of hemoglobin over 75 is considered normal. The amount of iron in the blood of a healthy adult is equal to that in a two-inch nail, and about one-twelfth to one-sixth gr. is absorbed daily from the food. We shall not consider the way iron acts as a food; there has been much controversy about it. We know that ordinary doses of iron by the mouth are efficient in chlorosis and in secondary anemias, providing we can remove the cause. Experiments by Charteris on normal animals showed that even more iron was found in the tissues when it was combined with food than when iron was given under the skin.

In certain conditions of disturbed digestion or severe anemia iron may preferably be given by the mouth. It is, however, a form of bunk or graft to give pale people iron subcutaneously when they may take iron economically by the mouth either as pink pills or other ferruginous preparations. It is a species of spondulix therapy, first, because it is an unnecessary expense and, second, because the class of patients in this favored group are not usually anemic at all, when judged by scientific standards and not by pecuniary desires. Furthermore, there is danger of abscess, not wholly hypothetical. The average percentage of hemoglobin in chlorosis and in severe secondary anemia is about 42 per cent. In the class of patients under discussion it will be found to be nearly double this percentage. The routine treatment of pale people by hyperdermatic injections of iron is a modern instance of brass acting on iron to produce gold—a veritable alchemy. K. W.

THE VANISHING FAMILY DOCTOR

It has been quite popular of late for writers in the lay press and various magazines to decry the passing of the wise old family doctor who could treat everything from corns to broken bones and was the mentor and guide for all family problems. Whether or not his departure has become a real loss to the community is still an open question. One phase of the problem was presented by Dean Richard B. Dillehunt, of the University of Oregon Medical School, who addressed the health institute last month in Portland. He commented on the acute scarcity of general practitioners, so well known and so useful in former days, and declared there was a crying need all over the nation for more country doctors.

This expression of a medical need has been heard from many sections. On the other hand, there has recently been noted the statement from some rural sections that there is no real scarcity of country doctors, that the need is not for more but better ones. Hesitation on the part of a young doctor to settle in an unattractive part of the country district is clear enough to any observer. The fascination of the large fees of the specialist in all branches of practice demands the enthusiastic following of every student of medicine. A prominent surgeon in one of our cities recently declared that the future field for the well equipped medical man will not be in surgery but in internal medicine, where there is really a scarcity of efficient practitioners at present. A listener remarked, "Yes, that is true, but it does not bring home the bacon." Until the financial returns to the internist and general practitioner are to a reasonable degree commensurate with those of the surgeon and other specialists, there can be anticipated no great rush of young practitioners to fill the alleged demand for the old fashioned family doctor and general practitioner. The solving of this problem for the country districts may lie in the proposal for the community hospital which will serve a large district with sufficient patronage to engage the efforts of a few thoroly qualified practitioners in different lines who will be enabled to establish in the country one of the groups like unto those which have attained such vogue of late in the cities. This discussion is but another evidence of the evolution of the practice of medicine from the conditions of a past generation, responding to the new demands of the present day.

LETHARGIC ENCEPHALITIS STATISTICS

The recent report from the Bureau of the Census on deaths from lethargic encephalitis for the year 1920 showed that this disease has become something to be reckoned with in the United States. During that year 1505 deaths occurred from this disease in the registration area, against 589 in 1919. Cities were credited with 1129 and rural sections with 376 of this number. It is rather striking that only 52 of these deaths occurred among the colored population. The distribution among sexes was about equal, 781 males, 724 females. More deaths appear between the ages of twenty and twenty-nine, a less number between thirty and thirty-nine. In the Pacific Northwest, Washington was credited with 68 deaths in 1920 against 24 in 1919, while the figures for Oregon respectively were 23 and 10. Utah reported three for 1920, none for 1919. These figures would lead to the opinion that this has become an established disease and the practitioner should keep its possibility in mind at least as a suspicion in suitable cases.

GRADUATE MEDICAL LECTURES

Preliminary notice appeared last month of the Graduate Medical Lectures at the University of Washington, July 17-21, and the completed program is now practically made up. This lectureship, now in its sixth year, offers a program fuller than ever before. The three principal courses of five lectures each will be given by Dr. John B. Deaver in surgery, Dr. Hobart Amory Hare in internal medicine and Dr. William McKim Marriott in pediatrics. In addition to these courses there will be evening lectures on Tuesday by Dr. William Engelbach, on Wednesday by Dr. Joseph C. Bloodgood, and on Thursday by Dr. Walter B. Cannon. None of these men needs any introduction in the medical and surgical world. They will speak on subject of vital interest and applicability in practice.

The committee has arranged to have the annual dinner on Monday evening, the opening day, so that the opportunity for acquaintanceship which that dinner gives may come at the beginning of the week. Arrangements have also been made to serve luncheon at the University Commons, as has been done for the last two years, but this year the price of the luncheon will be included in that of the lecture tickets, the desire of the committee being to bring all of the attending physicians and surgeons together at the noon hour for social conference. The University of Washington Extension Service is now selling tickets for the course, which is to be held this year on the week beginning July 17. Full particulars and programs can be obtained from the Extension Service.

ENTERTAINMENT FOR THE A.M.A. MEETING AT ST. LOUIS

While the American Medical Association is a scientific organization, there is a sufficiently human element among its members to demand a measure of social attractions in its gatherings. For the benefit of those visitors who enjoy diversions aside from the scientific features of the meeting, the local entertainment committee has provided a series of attractions. On Monday previous to the opening day the annual golf tournament is scheduled. The opening meeting of Tuesday evening will be held in the Odean. The music and addresses will be transmitted by radio to various parts of St. Louis and distant cities. Wednesday evening will be devoted to alumni, fraternal and similar banquets. Visiting ladies and those not engaged at these dinners will be entertained at one of the city's noted moving picture shows with special features for the occasion. On Thursday afternoon the Medical Department of Washington University will give a tea on its grounds, while the evening will be devoted to the president's reception. The chief feature of the whole entertainment is reserved for Friday evening at the unique open air Municipal Opera which has a seating capacity of 10,000. It is stated that every visiting lady

MEDICAL—MAY—D-ONE will have personal attention and every hour will be arranged for her entertainment. The profession of the city requests that visiting doctors make a week of it and enjoy everything that is scheduled for their entertainment.

PACIFIC COAST OTO-OPHTHALMOLOGICAL SOCIETY

This society desires to announce its tenth annual session to be held in Salt Lake City, September 14-16. This is said to be the most beautiful time of year for Salt Lake City and its environs. Members of this society are requested to keep this meeting in mind and to notify the secretary regarding any proposed contributions or pathologic specimens for the meeting.

NEW ADVERTISEMENTS

Atteention is called to the following advertisements, appearing for the first time in this issue. University of Washington Graduate Medical Lectureship (page 7) announces its program for this year. Reid Bros. Inc. (page 20) present an opening announcement of their new location.

MEDICAL NOTES

OREGON

The Health Institute. Several days were devoted last month to the public health institute at the Multonomah Hotel, in Portland. Addresses were made by leading physicians of the city with several speakers from elsewhere. Cancer figured prominently in the discussions as well as industrial and school hygiene, with other matters pertaining to public health. Dr. A. T. McCormack, State Health Officer of Kentucky, was the guest of the occasion. He predicted that the new Multnomah County Hospital would prove a contributing factor to make Portland famous as one of the health capitals of the world.

New Public Health Official. Dr. F. M. Gordon has been transferred from Baltimore to Portland to take charge of the Public Health Service. He succeeds Dr. N. E. Wayson, who has been transferred to San Francisco, where he will have charge of the research bureau. His particular work will deal with bubonic plague.

Will Tour Europe. Dr. G. E. Henton, of Portland, has gone for a six months trip in Europe. He will travel thru different countries, visiting clinics and various points of interest.

Dr. W. C. Houser, formerly of Portland and Richland, has settled for practice at Haines. He has taken the practice of Dr. Alexander Reid who has retired to his ranch.

WASHINGTON

Hospital Site Difficult to Locate. The management of the Seattle General Hospital Association has made a strenuous effort to obtain a location for the new $1,000,000 hospital which they propose to construct. The city ordinance forbids hospitals within eight hundred feet of a public park or boulevard. The enforcement of this ordinance under the inspiration of adjacent property owners has barred the hospital from several desirable locations. The usual objection has thus far prevented beginning the work on a very much needed institution in that city.

Construction of Orphanage. The construction of an orphanage has been begun in Seattle for the Sisters of the Sacred Heart, to occupy a twenty-five acre tract. It will be a five story, fireproof structure to cost $350,000. It will be one of the finest buildings of its kind in the Northwest.

Hospital Traded. The Mt. Vernon Hospital, the property of Dr. H. T. D'Arc, has been traded to another owner in exchange for a thirteen-acre ranch. The hospital will be continued under the same management as in the past.

Visit of Ambassador Geddes. A notable event in Seattle last month was the visit of Sir Auckland Geddes, the British Ambassador. Owing to the fact that he is a physician, formerly professor of anatomy at McGill University, his visit was of special interest to the medical profession. The county medical society entertained him at luncheon, when he delivered a brief address, the substance of which referred to the broad field of opportunity for physicians to exercise a wholesome and powerful influence on their clientele for a more active participation in the economic and political welfare of the nation.

Smallpox at the Head. The health report of Tacoma for March places smallpox at the head of the list of communicable diseases, in that city, these cases numbering 46.

New Health Officer. Dr. E. M. Botts, of Walla Walla, has resigned from the position of health officer to go to Wenatchee, where he will head public health work. Dr. E. A. Montague will be his temporary successor.

In Memory of Patriotic Nurses. Eight Seattle women lost their lives in services incident to the World War. Their memory was recently perpetuated by the planting of trees dedicated to them on the Memorial Highway between Seattle and Tacoma.

Will Return to Practice. Dr. W. T. Christiansen, of Seattle, will resume practice after having served a term as a member of the Port Commission, of which he is at present president.

Rabies Suspected. Rabies among dogs has been present for some time in Grant County. It has been particularly widespread attacking domestic stock and coyotes. Several suspected cases have been quarantined in the vicinity of Tonasket.

Medical Library Discussed. At the April meeting of the Snohomish County Medical Society the question was discussed of establishing a medical library. A committee was appointed to investigate the possibility of such an institution.

Medical Wedding. Dr. S. M. Titus, of Spokane, was married on March 30, in San Francisco, to Mrs. Monroe K. Miller, formerly a resident of Spokane.

IDAHO

Upper Snake River Medical Society. At the regular meeting of the society held in Rexburg, Ida., April 3, the usual program was dispensed with and the time was given over to a testimonial of respect and appreciation of three medical brothers who are leaving for new fields of endeavor at Spokane, Wash. The following resolution of respect and good will was passed by the society:

WHEREAS, Drs. G. G. Espe, Pres., F. B. Evans, Vice-Pres., and C. W. Martin, member of Upper Snake River Medical Society, are leaving soon for their new fields of work at Spokane, and

WHEREAS, they have been prime factors in our society's initiation and progress, and

WHEREAS, we feel their departure a distinct loss by virtue of their sterling characters, high medical ideals, and professional ethics, therefore be it

RESOLVED, that we express our confidence and appreciation of their association with us, and wish them God speed and success, in the largest measure, in their activities in the new field to have chosen; and that a copy of these resolutions be spread upon our records and a copy sent to **Northwest Medicine.**

Committee:
JOHN R. GRAY,
G. T. PARKINSON,
J. E. MELTON,
PARLEY NELSON, Secy.

Hospital Offered to Government. The War Mothers, of Lemhi County, recently completed a memorial hospital in honor of the veterans of that county who died in the World War. This organization, located in Salmon, has offered the hospital to the Veterans' Bureau in Washington, D.C., to be taken over by that organization for a tuberculosis hospital.

New Hospital Proposed. The Nazarene Church, of Nampa, is considering the erection of a hospital in that city to replace the sanatorium now in use.

State Examination. Twelve applicants were examined at Boise last month for license to practice. Five took the state examination, the remainder presenting certificates from other cities.

Dr. E. W. Fox, of Hailey, has departed from that city to locate at Craig, Prince Edward Island, Alaska, where he will have charge of a hospital.

OBITUARIES

Dr. J. M. P. Chalmers, of Vancouver, Wash., died April 7 after an illness of five months. He was 55 years of age, born in Aberdeen, Scotland, coming to America at the age of six. He was a graduate of the Portland high school, University of New York and Bellevue Medical School of that city. After serving as intern at Gouverneur Hospital, N.Y., he returned to Portland, where he practiced for three years, later locating at Vancouver where he practiced for twenty-eight years. He served two terms in the state legislature and was a member of the state board of medical examiners. For eight years he has been city health officer and for five years county health officer.

Dr. Gunder T. Trommald, of Portland, died March 28, following an attack of quinzy and abscess of the throat. He was 55 years of age, born in Norway. He practiced in Portland for more than 25 years.

REPORTS OF SOCIETY MEETINGS

PORTLAND CITY AND COUNTY MEDICAL SOCIETY

Pres., J. G. Strohm, M.D., Secty., H. C. Bean, M.D.

A regular meeting of Portland City and County Medical Society was held at the Chamber of Commerce, Portland, Ore., April 5, 1922.

A dinner was given with Dr. Whiteside as guest of honor, and Dr. E. F. Tucker acted as toastmaster.

The following were unanimously elected to membership: Drs. N. S. C. Checkos, T. M. Henderson, F. R. Stricker.

Report of Cases:

Dr. House reported a case of Encephalitis. and also stated that there were at least four in the city at the present time.

Dr. Plummer, King County Medical Society of Seattle, discussed their plan of meeting. He reported an average attendance of 90 members, and that fifty-four papers were presented each year. They divide their meetings into the following heads: General Meeting each month, two Surgical Sections, three Medical Sections, and four Special Sections. Sixty is the average attendance at each meeting.

Mr. Robinson, of the Credit Bureau, reported that the Doctor's Exchange in Seattle, is managed by the King County Medical Society, and operated for $1.75 per month.

Drs. Marcellas and Bettman discussed the above question and, on a motion made by Dr. Bettman. it was voted that on account of the small attendance at this time it was not feasible.

Dr. Stricker gave a report of the state health officer's part in the present streptococcic infection in the city of Portland; that Dr. Sears had examined milk and found that hemolytic streptococci in one of the employees probably infected the cow. The entire milk question was referred to the Committee on Public Health for report to the society at the next meeting.

Special meeting of the society held in the Green Room of the Chamber of Commerce, April 12, in conjunction with the State Board of Health.

Meeting was called to order by the President, Dr. Strohm, who requested that Dr. C. S. White introduce the speaker of the evening, who was Dr. A. T. McCormack, health officer for the State of Kentucky, who gave a very interesting and entertaining talk in the relationship of the physician to the public and especially of his duties to the rural communities.

Dr. Williamson closed the discussion and, on motion made by him, the society went on record approving Dr. McCormack's address and expressing to him the appreciation of the society.

BOOK REVIEWS

Edited by Kenelm Winslow, M.D.

Oxford Medicine. Edited by Henry A. Christian and Sir James Mackenzie. In six volumes Volume V., Infectious Diseases and Diseases due to Animal Parasites. Cloth, 964 pp. Oxford University Press, London and New York, 1921.

This volume opens with an admirable account of septic sore throat by Davis. As Portland has recently been the scene of a severe epidemic derived, as always, from raw or imperfectly heated milk, the article possesses much interest. The number of cases arising from contact with the sick is usually small but the disease is somewhat contagious. This disease, and milk-borne epidemics of scarlatina, diphtheria, typhoid, etc., would never occur were all milk to be properly pasteurized in the final container. The very cream of model dairies, so to speak, with every latest device and laboratory safeguard to avoid milk infection may at any time become a very fount of the very worst infections, if the product be raw. This was the case in the dreadful Boston epidemic of septic sore throat, studied so carefully by Winslow and traced to the most renowned model dairy in New England, Deerfoot Farm. As the infection of milk may either come from an infected udder or from an infected throat of a milk handler, it will be realized that the avoidance of such is practically impossible. But pasteurization of milk is not an absolute safeguard, as infection may occur in milk after its pasteurization. Therefore the only wholly safe method is pasteurization of milk in the sealed milk bottle. This is very rarely done but is now practised at Deerfoot Farm. The method advocated for years by the reviewer is that the best milk be procured (certified milk), and that it be pasteurized at home, a very simple process.

Peabody, in his article on Anterior Poliomyelitis, is most conservative in regard to specific treatment. He states that only from the use of serum from recovered patients can benefit be derived. The minute filterable organism of Flexner is deemed specific and the streptococcus of Rosenau is regarded as a secondary invader only. No mention is made of Rosenau's serum, nor is his name mentioned in the bibliography.

Botulismus, by Dixon, is another article of much interest. Poisoning by B. botulinus is now found not to be confined to sausage, meat and fish, for most of the cases reported in this country have arisen from canned fruit or vegetables. The only sure safeguard consists in cooking and this usually does not impair the already prepared food, even sausages which may be served in fried form. Canned vegetables, served without cooking and covered with salad dressing, are especially dangerous because impairment in taste or flavor, usually noticeable, is thus disguised. These volumes contain the latest authoritative word in medicine. If the subject matter seems a little too concise, the style is peculiarly adapted for further amplification thru the loose leaf system by the avoidance of any questionable matter. That seems to be the underlying motif of the whole work. Only the proven shall enter here. Oxford Medicine is essentially conservative. WINSLOW

Oxford Medicine. Edited by Henry A. Christian and Sir James Mackenzie. In six volumes, illustrated. Vol. VI., Diseases of the Central Nervous System. Cloth, 1099 pp. Oxford University Press, London and New York.

One of the most interesting articles in this volume is by Howell on lethargic encephalitis. The association of encephalitis with poliomyelitis and influenza, in respect to their occurrence in epidemic form at the same time as bearing on etiology, is pointed out. That is the fact that the disease may be due to the same organisms. But encephalitis occurs generally in earlier life than poliomyelitis, and until the causative organisms of influenza and encephalitis are determined, their relationship, if any, must be in doubt.

In regard to differential diagnosis in encephalitis the writer states that "papilledema is rarely met with in encephalitis" and so "its presence would probably decide in favor of abscess or tumor." But this statement cannot be too strongly relied upon as a case, in which papilledema was marked and all other symptoms of cerebellar tumor were present, as vomiting, headache, dizziness, paralysis of the eighth nerve, ataxia and falling, proved on autopsy to be encephalitis. So, in reference to differentiation of encephalitis from tuberculous encephalitis, the writer would lead one to consider that the spinal fluid findings were distinctive, as also in poliomyelitis. But this is by no means always the case. Encephalitis is at times one of the most difficult of diseases in which to arrive at a positive and correct diagnosis, as autopsies have only too often led to our mortification in its most literal sense (to humble by death). Howell points out briefly the uncertainty of the prognosis in encephalitis, and affirms that no drug has been found which has any beneficial effect on the course of the disease.

The account of encephalitis is like those generally in these volumes. It touches the more salient features in relation to the disease in a scholarly, concise and clear style, with the avoidance of all lesser details in description. One may be somewhat disappointed in the brevity in the treatment of special diseases of particular interest to the reader but, considering the immense range covered, in fact the whole domain of medicine, it is perhaps a meticulous criticism. Quality is assuredly far superior to quantity, and the predominant desire for more of the same quality is perhaps the best feeling that one could retain after the perusal of these admirable monographs. WINSLOW

The Glands Regulating Personality. A Study of the Glands of Internal Secretion in Relation to the Types of Human Nature. By Louis Berman. Associate in Biological Chemistry, Columbia University, etc. 300 pp. The Macmillan Company, New York. 1921.

This is a most fascinating book. Every physician has some knowledge of the ductless glands and their secretions. This information for the most part is fragmentary and unrelated. In this work is presented a systematic and coordinated review of the glands and their relations to the human economy. After reading it one can not fail to realize the tremendous effect on the character, characteristics and personality of the individual which proceed from the different ductless glands. For instance, he portrays most vividly the stimulating and vitalizing energy originating from the thyroid secretions, which is controlled and stabilized by the secretions from the aderenals. Likewise each gland is considered and its individual functions disclosed. So characteristic are the effects on the individual of the dominating secretion from a particular gland that one well versed in the subject is able to identify on the street the thyroid, the pituitary, the adrenal and other types. Every physician interested in this tremendous subject which has so greatly developed in recent years should take time to read this book. SMITH

Papers From the Mayo Foundation for Medical Education and Research and the Graduate School of Medicine of the University of Minnesota, covering the period of 1915-1920. Octavo volume of 695 pages with 203 illustrations. Philadelphia and London: W. B. Saunders Company, 1921. Cloth, $10.00 net.

In this volume are published theses or, more often, abstracts of theses, presented by graduate medical students as requirements for degrees of M. S. and Ph. D. They are chiefly written by younger members of the staff at the Mayo Clinic and are specially valuable in that so much clinical and accurate statistical material is available for study. The papers are both in the nature of scientific researches and experiments in more or less recondite matters pertaining to medicine, and also in the nature of contributions to practical clinical medicine in the study of large series of cases.

Pertaining to the alimentary tract there is a consideration of cancer in its relation to ulcer, by McDowell. The study was based on resected tissue of 399 gastric cancers. In 42.6 cases there was doubtful evidence of previous ulcer. The verdict reached, however, was that cancer rarely develops except on an ulcer basis. Another paper by Crispin takes up the various causes of gastric hemorrhage other than ulcer which are always puzzling. Ruling out general disorders, as purpura, anemias, leukemia and gastric hemorrhage in young women, the condition is more apt to be due to infection of the appendix or gallbladder. The visceral crises in angioneurotic edema, associated with urticaria, erythemas and purpura, are also considered in relatiou to abdominal diagnosis. Many of the articles are more scientific than practical but, as a whole, the work is a valuable contribution, altho not nearly so much so as the annual publications of work of the regular staff of the Mayo Clinic.

WINSLOW

Diseases of the Skin and the Eruptive Fevers. By Jay Franke Schamberg, M.D., Professor of Dermatology and Syphilis, Graduate School of Medicine, University of Pennsylvania. Fourth Edition Thoroughly Revised. Octavo of 626 pp., 265 illustrations. Philadelphia and London: W. B. Saunders Company, 1921. Cloth, $5.00 net.

This work combines a brief, concise consideration of diseases of the skin, including syphiloderma, and the eruptive fevers. The subject matter is presented in a very attractive manner, is revised up to the date of issue, and is clothed in the best style of the printer's art. The section dealing with the subject of syphilis is captioned "Syphiloderma" and iu geueral only the skin manifestations of the diseases are discussed. The articles on serodiagnosis and the modern treatment of the disease, including a discussion of arsphenamin reactions, are of great interest because of the large amount of experimental research work done by Dr. Schamberg and his associates along these lines. Ou the whole the book will be an excellent quick reference work for the busy practitioner; and by reason of its moderate cost, readability and authenticity deserves a place in the library of every medical man. The illustrations are largely original, are well reproduced, and are very helpful CRABTERE

Infant Feeding. By Clifford G. Grulee, M.D., L.L.D., Associate Professor and Acting Head Department of Pediatrics at Rush Medical College. Fourth Edition, Thoroughly Revised. Octavo of 397 pages, illustrated. Philadelpia and London: W. B. Saunders Company, 1922. Coth, $4.50 net.

The recent literature on infant feeding is most thoroly catalogued and incorporated in the test.

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The bibliography is most extensive. The chapter on metabolism has been thoroly expanded to cover the numerous recent contributions, and the metabolic aspects of the various nutritional disorders receives considerable attention. The author particularly directs attention to Marriott's investigations in decomposition and intoxication. The conservative attitude toward early mixed feeding in infancy is maintained, the author attributing serious nutritional disorders to the less conservative procedure. It is also interesting to note that he dismisses the dietetic treatment of congenital pyloric stenosis rather summarily, relying largely upon the surgical treatment. A full discussion of the strictly dietetic aspect of this condition would be a most welcome feature in a book of this nature.

MOHR

Surgical Clinics of North America. Vol. 1, No. 6. December, 1921. New York Number. Vol. 2, No. 1, February, 1922, Philadelphia Number. W. B. Saunders Co., Philadelphia and London.

The New York number contains the papers from leading physicians of New York on a great variety of subjects. Some of them are as follows: Suppurative bronchiectasis, single stage lobectomy; collapse of chest for pulmonary tuberculosis; revision of laminectomy for fractured spine; jejunostomy; high enterostomy for the relief of ileus complicating appendicitis; giant endothelioma of medulla; neurologic manifestation of fracture of skull; cancer of lower end of the esophagus. Other subjects of equal importance and interest are presented.

The Philadelphia number contains papers from eighteen of Philadelphia's best known surgeons. Deaver, Ashurst and Frazier describe sixteen cases of great variety and interest. Several papers on different phases of carcinoma and written by various authors. It is impossible to detail the many features of interest in this volume. All deserve careful perusal.

SMITH

Medical Clinics of North America. Vol. V., No. 3. Philadelphia Number. Vol. V., No. 4, New York Number, January, 1922. Published bi-monthly, $12 per year. W. B. Saunders, Philadelphia and London.

These volumes contain the usual number of valuable papers on a great variety of subjects. The Philadelphia Number presents articles by many of the leading members of the profession of that city. They deal with diseases of the heart, chest and abdomen. The Wassermann reaction is considered in two papers. Others treat of pituitary disorders, duodonal ulcer, Hodgkin's diseases, hyperthyroidism, nephritis and glycosuria.

The New York Number presents eleven papers by representative men of that city. The subjects treated are epidemic jaundice, staphylococcus endocarditis, treatment of pneumonia, capillaries in circulatory disorders, endocrine factors in functional diseases, management of chronic nephrosis, appendicitis, acute thyroiditis, treatment of high blood pressure, gastric ulcer. In these volumes one finds the latest information on the subjects considered, presented concisely and entertainingly.

SMITH

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In this issue will be found the announcement of the opening of new and larger quarters for Reid Bros., at 1417 Fourth Avenue, Seattle, Wash. This well known firm began doing business in Seattle in 1908, opening their first store in one small room in the Arcade Bldg., with the idea of producing and selling Surgical Goods to doctors and hospitals, at the lowest possible prices consistent with quality merchandise. Today they are the largest manufacturers and dealers of Surgical Equipment and Supplies in the United States, maintaining in Seattle the largest and best equipped factory, manufacturing Aseptic White Enamel Steel Furniture for doctors, dentists, and hospitals, to be found any where in the country.

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ORIGINAL CONTRIBUTIONS

CESARIAN SECTION IN THE TREATMENT OF ECLAMPSIA WITH REREPORT OF ONE POST-MORTEM DELIVERY*

H. E. Wheeler, M.D., F.A.C.S.

SPOKANE, WASH.

In eclampsia in some 90 per cent of cases after the uterus has been emptied the great danger is passed. The convulsions do not always cease immediately but usually become less severe and the patient gradually becomes less toxic. In postpartum eclampsia the mortality is only 7 per cent. Opinions differ as to the treatment of a patient at term who has started in the first stage of labor suffering with eclampsia. Expectant treatment is certainly dangerous to the child and, according to some authorities, one-third of the mothers do not survive. Lupman records a maternal mortality of 30 per cent from expectant treatment, while in immediate delivery by operation it is 2.8 per cent. Zweifel has a death rate of 28.4 per cent in expectant and 11.25 per cent in operative treatment. Early delivery certainly saves more children, authorities say at least two to three times as many.

Methods of rapid delivery are as follows: (1) Accouchment force, (2) vaginal cesarian section and (3) abdominal cesarian section. The method used depends upon whether the patient is a primipara, the stage of labor she is in, the degree of toxemia and the month of the pregnancy. In a primipara the cervix usually takes longer to dilate and labor is much slower than in a multipara.

By accouchment force we mean rapid and immediate delivery from below after the cervix is dilated, either by version or instruments. This may be considered if the cervix is effaced and the head is engaged. But, where there is no dilation, this method predisposes towards infection of the mother and renders her more liable to severe lacerations. Vaginal cesarian section is more often indicated in the middle third of gestation. I have been able to find very little literature on this method of rapid delivery. One authority gives a mortality of 50 per cent. This operation, it seems to me, has more obstacles in its performance, especially if the cervix is high and hard to bring down. Even deep incisions may make it difficult to extract the child. Furthermore, the control of hemorrhage is more difficult than by the abdominal method.

In 1893 Duhrssen recommended the immediate emptying of the uterus of eclamptic patients, favoring vaginal cesarian section instead of accouchment force. If the operation was performed just after the first convulsion, he found that in 90 per cent the attacks ceased;

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* Read before Spokane County Medical Society, Spokane, Wash., March 23, 1922.

the mothers recovered. But, if performed after several attacks, the results were not good, tho even then the mortality was lowered 15 to 20 per cent.

Abdominal cesarian section is often the easiest way to effect a rapid delivery. But there are several things to take into consideration before deciding on this course. Williams has shown that there is a marked diminution in the mortality list when cesarian section is done early in labor. By this procedure repeated vaginal examinations have not been made thereby eliminating infection. Nearly all authorities agree that a rigid, undilated cervix is also another indication that should be considered. An abdominal operation that requires only a few minutes is certainly more beneficial to a patient than a dilation of the cervix and an injury to the lower uterine segment and perineum. It is important that the bag of waters be not ruptured, as this increases the likelihood to infection. We know that bacteria can invade the placenta even a few days before the birth of the child. Only rarely is it necessary to perform this operation on a multipara, unless besides the eclampsia she has rare complications, as disproportions, tumors or a rigid, high placed cervix.

Following is a report of three cases of eclampsia, where abdominal section was performed in addition to medical treatment.

Case 1. Mrs. F. G., age 18, at term, ht. 4 ft. 9 in., wt. 97 lbs. Urinalysis had not been made for two months.

I was called to see her at 6 a.m. on March 24, 1920, and found her in a convulsion. For several days she had had severe headaches, spots before her eyes, and blurring of vision. She had recently become very stuporous, her mother said. Her hands, feet and fact were swollen. Her husband was awakened by her first convulsion a few minutes before he called me. Five of these followed in rapid succession, whereupon she was removed to the hospital. On examination a rigid, undilated cervix was found, her pulse was rapid and weak, her systolic blood pressure was 180. A cathaterized specimen of urine contained a great deal of albumin and many casts.

A six and three-fourth pound baby was delivered by cesarian section. One-half hour after the operation she had another severe convulsion. From then on her postoperative convalescence was uninterrupted. Albumin continued in the urine for several weeks; the blood pressure gradually came back to normal. Fourteen months after this operation I delivered her of a seven and one-half pound girl; a breach presentation. Toxic symptoms were not noted this time.

Case 2. Mrs. L. L. L., age 30, primipara, at term, came under observation because of albumin and edema of the hands and feet. She was put on a restricted diet, dry hot packs and active elimination was encouraged. Headaches became more severe and blurring of vision more marked, systolic blood pressure gradually rose to 200 Morphine was given and a bag introduced into the cervix. This was left all night with only a few pains resulting. Blood chemistry was practically normal at this time. The next morning I was called to the hospital and found her in coma after having had several convulsions. There was very little more dilitation of the cervix and almost complete suppression of urine, altho she had been given glucose and soda solution by rectum during the night.

Abdominal cesarian section was performed, delivering an eight pound girl. Following the operation she had seven more convulsions, after which she made a gradual recovery, the urine being clear in six weeks. Dr. X. L. Anthony examined her eyegrounds after the urine was clear and pronounced them normal.

Case 3. Mrs. L., age 39, primipara came to me a month beyond term according to her calculation. Her hands, face, and feet were bloated, her systolic blood pressure was 200 mm. Hg. Her urine was loaded with albumin. On examination, beside the pregnancy she had a large fibroid on the left side, about one-half the size of a pregnant uterus. She had also had several hemorrhages due to a placenta previa centralia.

On account of these serious complications it was decided to do an abdominal cesarian section. The field was prepared before the anesthetic was begun. Before she had taken one-half dozen inhalations of gas-oxygen she became blue and pulseless. The other physicians present did everything possible to resuscitate her, but to no avail. Postmortem cesarian section was performed. There was no hemorrhage from the incision and it took but a few seconds to deliver a girl baby who apparently had succumbed. After strenuous efforts the baby was resuscitated and is today in excellent health. While doing this we found the large fibroid spoken of, and the placenta implanted in the cervix.

A study of these three cases impresses us with the importance of having our patients under absolute control thruout pregnancy and especially during the last few weeks. We should be on the alert not only for signs of placenta previa, but also for toxemia of pregnancy in all its manifestations. I think in the majority of cases of eclampsia, proper medical treatment will eliminate the necessity for operative interference, altho many cases are on record in which excellent therapeutics were of no avail and surgery became necessary. It seems to me that abdominal cesarian section is the best treatment if the patient is a primipara, has a long rigid cervix, has not had frequent vaginal examinations, the membranes are not ruptured, the baby is alive and viable, and the operation may be performed early in the first hours of labor.

The first two patients I believe would not have survived, had we waited until Mother Nature had dilated the cervix and expelled the fetus. Furthermore, instrumentation would probably have been required and would, in the haste necessary, have injured both the infant's head and the mother's perineum.

The etiology and pathology of eclampsia are interesting from a surgical point of view. We know that a toxemia is present and that the quicker the pregnancy is interrupted the sooner the toxemia is eliminated.

Eclampsia is often called the "disease of theories." Those that are receiving the most attention at present are the fetal and placental theories. In the mother's blood there is circulating a substance or toxin which produces a degenerative change in the kidney with albuminuria and also necrotic changes in the liver. Titus and Givins[3] think the toxemia depends on a carbohydrate deficiency. In our second case the blood chemistry findings were normal. Dr. M. M. Patton tells me he finds this uniformly true in a number that he has examined. Gwenard and Potocki administered methylen blue to seven eclamptic patients and demonstrated the dye in the urine a very short time after its administration, showing that there is little impairment of the renal function. The pathologic findings in the kidney are not uniform. Some show degeneration and necrosis of the renal epithelium, others have no change at all. According to Williams[4], Bar, in 38 autopses, found very slight renal change in one-half of his cases.

The reports on the blood chemistry have been rather disappointing, altho Killiam and Sherwin[5] found the chemical changes in the blood typical of impairment of kidney function in general. They noted in most cases prompt improvement in the clinical symptoms and the chemical composition of the blood after the uterus had been emptied.

Young and Muller[6] think the toxemia is due to the early degeneration of a piece of placenta, whose circulation has been impaired. However, in fulminating cases with rapid labor or death changes in the placenta are lacking. In milder cases massive necroses are found. In accidental hemorrhage, albuminuria was found in 30 to 80 per cent of cases. In 21 cases it was found in 90 per cent. Toxemia here seems to be the result of the bleeding. Two cases were reported in which urinalysis was negative a few hours after bleeding; later albuminuria was found. If toxemia is to develop, a part of the placenta must remain attached so that the necrotic area can pass its toxin into the circulation. This helps explain why toxemia ceases after intrauterine death of the child or complete separation of the placenta.

Our second case had had considerable trouble with her eyegrounds, which is in accord with Lindgren's[7] report of 74 cases of visual disturbances, who, before they were discharged, showed practically normal eyegrounds. This he attributed to immediate delivery after the first sign of toxemia. One case, where a three-day delay was necessitated, had an optic atrophy as the end result.

Before one decides to do a cesarian on an eclamptic he should appreciate the great danger of repeated vaginal examinations. Rectal examinations will give nearly as much information and are certainly much safer for the patient. We all have had deliveries where no vaginal examinations were made. These cases as a rule do not worry us as do those that have had several. However, if there have been several examinations and the field is infected, or likely to be, the safest procedure is to do either a porro-cesarian or an extraperitoneal casarian section.

White[8] found after a few cesarian sections a suppression of urine. On six of these he did nephrotomies after the cesarian. The results in regard to immediate free diuresis were good. He reports two cases. I think if there is an anuria for twenty-four hours after the operation a nephrotomy should be considered.

In conclusion, we must say that, if the patient shows signs of toxemia, besides watching the blood pressure and increase of body weight, we should restrict fluid, put the patient to bed in a quiet, dark room, avoid excitation, consider lumbar puncture and blood letting and use sedatives. By this regime Zangemeister reduced the number going into convulsions from 28 to 5 per cent and in nephropathies from 43 to 25 per cent. Titus and Givin found intravenous injection of glucose helped reduce their death rate from 28 to 15 per cent.

However, if a convulsion occurs, the pregnancy must be terminated. Each case must be considered on its own merits. If the patient is a primapara and labor has not begun, the child is alive and viable, the cervix is rigid and the vaginal field has not been contaminated, I think an abdominal cesarian section is indicated.

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A PRELIMINARY REPORT ON THE SURGICAL PREVENTION OF STERILITY DUE TO SALPINGITIS

Edward F. Ziegelman, M.D.
PORTLAND, ORE.

It may not be amiss in an article of this kind to clarify the meaning of the term salpingitis and what it implies pathologically. It is defined in the text-books, as well as by most gynecologic teachers, to be an inflammation of the fallopian tubes, a very brief, concise and true statement. Regardless of this truth we must not forget that the pathologic processes, thru which the tubal structures pass before their complete involvement histologically, depend upon the type of invading organism, its virulence, its mode of entrance and probably in a measure upon the resistance of the structure itself. The pathologic steps incident to the development of gonorrheal salpingitis are different than that caused by other pyogenic organisms, such as streptococcus, staphylococcus, etc. We may have an involvement of one, two or of all of the histologic structures of the tube. This depends upon the degree of the inflammation.

A true gonorrheal infection of the tubes, not complicated by the presence of other organisms, develops by the gonococcus gaining entrance to the uterine end of the fallopian tube from a preexisting gonorrheal endocervicitis, using the corporeal mucous membrane as a bridge, and seldom if ever causing a gonorrheal endometritis. It seems that the uterine mucosa has a special power of resistance to this organism and the technic I will later describe takes this into consideration.

When the gonococcus reaches the tubal mucosa an inflammatory reaction results. If the inflammation involves the mucosa for its entire length, there is evidence after resolution, demonstrated by a study of serial sections, that the inflammatory process for the distance of at least one c.m. from the uterine cornua has not been sufficient to distort or destroy the mucous membrane for this limited area. The nearer we approach the fimbria the greater the pathologic reaction and the more destructive the process. The reason for the increased resistance of this tubal mucosa to the gonococcus, in inverse proportion to the distance from the uterine body, has never been explained satisfactorily. It may be due to chemical resistive agents in certain cells of the mucous membrane of the uterine body and this diminishes gradually the nearer we approach the fimbriated end. The histologic character of the mucosa is no doubt an important factor, for we know that the mucous membrane at the uterine end is not characterized by folds or rugæ, as it is nearer the fimbria. This being the case, the tendency to atresia at the uterine cornua would be less.

When an inflammatory reaction is brought about in the tubes by the gonococcus, an endosalpingitis first develops. This may be the limit of the structural involvement, or it may proceed to a greater degree of severity involving the muscular and serous surfaces, and this is the usual course. Following this endosalpingitis which is always present, a destruction of portions of the mucous membrane takes place with adherence of these surfaces causing a destruction of the tubal patency. The fimbriated end is usually closed by a similar process. This fimbriated closure and adherence of the tubal mucosa are two very important causes of tubal sterility.

There is a very rare and occasional type of tubal infection by way of the tubal ostium from the peritoneal cavity. The pathology incident to this type of infection is similar to that described and its bearing on the technic that I will mention is of very little importance.

In contradistinction to gonorrheal salpingitis let us briefly analyze the pathology incident to the invasion by pyogenic organisms other than the gonococcus. Nature has been very kind to womanhood in that it wisely protects her thru the great resistance that the internal os and mucous membrane of the cervix and uterus have to pyogenic bacteria, unless the structures are traumatized. Consequently practically all pyogenic infections of the pelvic structures other than gonorrheal are preceded by some type of trauma, the chief of which may be mentioned as obstetric injuries, abortion, curretage, surgical procedures on the cervix and uterine body.

When a pyogenic organism gains entrance thru any of the above mentioned sources, what happens? We either get a local involvement at the site of entrance, and fortunately this is the usual case, or a circulatory invasion takes place either thru the venous or lymphatic channels. If venous, we have developed the well known clinical entities as phlegmasia, thrombosis of the veins of the broad ligament, bacteremia or pyemia. In most cases nature controls this type of infection and confines it to the pelvic structures, tho occasionally it becomes systemic with almost always a fatal termination. The other type of involvement, that is the lymphatic, progresses to a general pelvic inflammation of the uterine adnexa, such as the broad ligaments and the structures that it contains. In this manner the fallopian tubes become involved by an invasion of the lymph channels. This inflammation begins in the outer structures, usually the serosa and muscular layers and not in the mucosa, as in gonorrheal salpingitis. What is the result? It either progresses to abcess formation or remains as a diffuse purulent involvement of the tubes, so well known to all pelvic surgeons. In either case portions of the mucosa are destroyed, due to destruction of its source of nourishment. This means in time new formed connective tissue, causing adherence of the mucous surfaces with resultant atresia. If an acutely inflamed tube of this type should be removed, cultures of the invading organism are easily obtainable and usually show growths of streptococcus or staphylococcus, etc. A far more interesting and important fact to remember is that, should a chronic tube of this type be removed even years hence in some cases, a culture of the invading organism can be obtained frequently. This is a very important fact to keep in mind when considering conservative surgery on tubes of this character.

To be able to deal with the condition safely, a knowledge of the gross pathology is very important. If the process resolves and is of a low type of infection, aided by the great resistance on the part of the patient, the mucosa may be only slightly affected. What are the sequelæ incident to involvement of the serous surfaces? Numerous adhesions due to the inflammation and in time contraction with resulting pulling and twisting of the tube. This naturally tends to cause tubal obstruction.

Following salpingitis, either gonorrheal or from other pyogenic causes, we may consider that the great majority of cases after resolution present an atresia to the passage of the ovum somewhere along the tube. This may be due to closure of the fimbriated end, adherence of the mucous membrane, twisting or kinking of the tube because of contractions or adhesions of the pelvic peritoneum. Any one or all may be present and of course prevents the passage of the ovum or the spermatazoon.

It is commonly believed that women who have pus tubes are sterile and in the great majority of cases this is probably true, tho it does not signify that the tubal patency is destroyed thruout. I have previously mentioned that in most cases of gonorrheal salpingitis there is a portion of the tube that is not involved. This applies to many cases of salpingitis due to types of organisms other than the gonococcus.

Taking these pathologic facts into consideration, I have had in mind for several years a conservative surgical procedure which to my satisfaction proves it possesses some merit. I have utilized it only where I felt that the invading organism was the gonococcus and where the pelvic pathology seemed to demonstrate that such was the case. Of course one can never be sure that a mixed infection is not present, tho the history many times will aid. My feeling is that the method should not be tried on chronic pyogenic tubal infection other than gonococcus, as there is a possibility of peritonitis developing.

The method is as follows: Treat all cases of salpingitis palliatively unless otherwise indicated and of course this implies surgical judgement. When possible permit them to become chronic and follow them for a period of six months or preferably a year. If surgical intervention is indicated, remove the tubes by any of the classical methods, conserving two c.m. of the uterine end, providing the gross pathology and judgement of the operator do not warrant total excision. With a small pointed scissors slit this conserved portion of the tube along its upper surface for a distance of one c.m. Fold as much of this slit portion backward as is possible, just as is done in the bottle operation for hydrocele. Place one or two plain catgut stitches thru this inverted portion, so as to appose peritoneal surfaces. By this method a new fimbriated end is made and the ostium is protected from closure by adhesions, which is so troublesome in case this method is not followed. About one c.m. of conserved tube remains. This in the great majority of cases is patent, providing surgical judgement and pathologic knowledge have been carefully used.

I have tried this method on seven patients in the past few years. All these cases gave a history of chronic gonorrhea. Of these seven patients three have married. Of the three married one has been delivered of a normal child, another is pregnant, and the third, at the time of my last communication from her, had not conceived. Other physicians with whom I have conferred state they have patients who have been delivered following partial salpingectomy, tho none to my knowledge have attempted to form a new fimbria or ostium.

I realize that the number of cases is very limited, tho I feel that this method warrants the hope that we may be of some benefit to that large class of unfortunate beings who have been relegated to the great group of so-called sterile women, in many instances unfortunates who must lead barren married lives. It appears to me that it is far safer and saner surgery to do this conservative method than the present day radical procedure used by many of excising the tube in complete continuity. This technic demonstrates some value clinically and is certainly based upon rational pathology. In total ablation of the tube and excision of the uterine cornua all chance and hope of conception is forever destroyed.

I do not forget that sterility implies disturbances in many portions of the generative tract in both male and female. Of course until such causes as ovarian disease, uterine disturbances, chronic endocervicitis, the elimination of causes in the male and many others too numerous to mention in an article of this kind have been determined, it would be folly to shift the responsibility to the fallopian tubes. And, unless these other causes if present are dealt with accordingly, no method of treatment of the tubes will be of avail.

CONCLUSIONS

Pathologically chronic salpingitis does not mean atresia of the lumen thruout.

Gonorrheal salpingitis is more prone to cause a greater area of tubal atresia than other types.

Extreme caution, pathologic knowledge and surgical judgement are required in treating other types of tubal infection than the gonorrheal by this method.

Many women, if other causes of sterility are eliminated, can be prepared for conception by judgement and conservative surgery in treating diseased fallopian tubes.

COSMETIC SURGERY OF FACE, NECK AND BREAST*

F. A. Booth, M.D.
SEATTLE, WASH.

In presenting the subject of cosmetic surgery of the face, neck and breast, I did not intend to cover the whole subject or to lay claim to original work. Those who are interested in the early history of this subject can find most of the details in Dr. J. S. Davis' Plastic Surgery, 1919.

My experience has been confined to sagging cheeks, drooping corners of the mouth, double chin, wrinkled faces and large, pendulous breasts. All of these conditions appear in middle life and annoy women very much.

I find the women in business life keenly interested in cosmetic surgery that will eliminate the lines of age and make them look the best to friends and public. The family physician, when appealed to, has not shown the proper interest in this kind of surgery, and the patient has depended on the newspaper and beauty parlor specialist to tell her what to do.

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* Read before King County Medical Society, Seattle, Wash., Mar. 20, 1922.

The operations I am about to describe are all done under a local anesthetic, except that of the breast. The incision is only skin deep in all except the chin and breast operations. The skin is prepared in the usual aseptic manner.

To correct the sagging cheeks, drooping corners of mouth and wrinkled face, the anesthetic is injected along the line of incision, which begins at the hair line in the temporal region and extends to within a quarter of an inch in front of and above the ear, continuing down in front a quarter of an inch, anterior to the ear, just in front of temporal artery and around under the lobe to the mastoid process. An extra amount of anesthetic should be injected at the stylomastoid foramen to block the facial nerve, and at the upper angle of the ear to block the auriculotemporal nerve. From line of incision, the injection has to be carried well forward on the face so that, when the anterior flap is dissected, there will be no pain. After the incision is made, grasp anterior flap with forceps and dissect forward one and one-half inches all along the incision. All hemorrhage is completely controlled by ligation or torsion. Retaining mattress sutures of silk-worm gut are now inserted at the important points where traction is needed. Small pieces of rubber tubing should be threaded on these stitches so as to keep them from cutting thru the skin and to facilitate their removal. The retention sutures are inserted well forward in the anterior flaps, say one and a half inches in the average case, so as to leave all space necessary to trim the edge freely (see figs. 1 and 2). After the mattress sutures are tied trim the free edge of the anterior flap with scissors to correspond with the edge of the posterior flap. Suture the edges of the incision with subcuticular silk-worm gut. It is important to overcorrect a third of an inch which will disappear after swelling subsides. The subcuticular sutures are removed on the fourth day and the mattress sutures at the end of a week.

To form dimples, mark the point where they naturally appear. Puncture skin, cellular and fatty tissue, with a narrow bladed scalpel, parallel to long axis of face. The puncture should be about one-tenth of an inch in length and never exceeding one-eighth of an inch. The deeper tissue is drawn thru the incision with a small hook and snipped off. The edges of the skin should be turned out and portions of the deeper layers of the skin cut away, so the tissue will become dimpled after healing occurs. No suture is necessary in this dimple operation. Where no tendency to dimple exists, it is necessary to insert a suture to invert the edges of the skin. This will make a permanent dimple, that is, one that will be present when the individual is not smiling (see figs. 3 and 4).

Wrinkles, folds and bags beneath the eyes are eradicated by the removal of a crescent of skin beneath the eye. The convexity of the crescent should be downward and the concavity should lie close to the lashes along the lower lid. The skin should be divided entirely, close to the lashes, leaving enough margin of skin next to the lashes for a row of stitches. The lower edge is loosened somewhat and drawn upward and trimmed with a pair of scissors in a crescent shape (see fig. 1).

The double chins are composed of fat only and are easily removed. The incision is made in the crease, posterior to the point of the chin. The dissection is carried just under the skin down to the thyroid cartilage and tapered off on each side. The fat is then grasped with forceps and dissected from the muscles of the submental region. The muscles do not make up any part of a double chin. After all hemorrhage is controlled, have patient sit up with head slightly forward so you can see the amount of lower flap to remove. Insert the retaining mattress sutures and tie. Trim lower flap with scissors and insert subcuticular silk-worm gut sutures. Dress chin with a firm bandage to obliterate all space under the flap (see figs. 6 and 7).

The patient complains of very little pain following any one of these operations after the first twenty-four hours. The scar consists of a fine line and the results are exceptionally pleasing. It is always best to explain to the

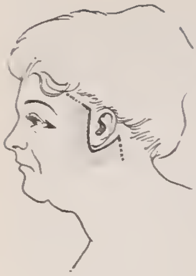


Fig. 1

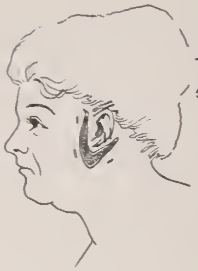
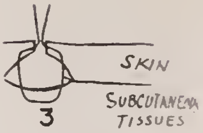


Fig. 2



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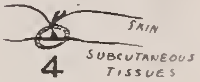

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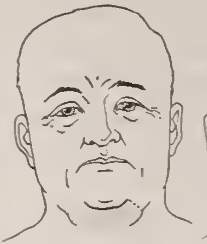

Fig. 6

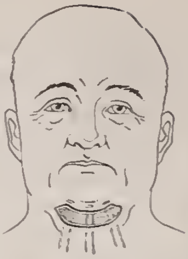

Fig. 7

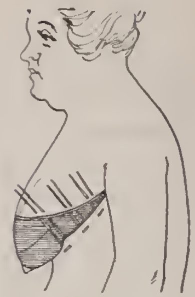

Fig. 8

Fig. 1. Solid line shows main incision. Broken line shows continuation of incision when needed. Dotted area shows amount of dissection. Arrow head incision at corner of eye shows amount of skin removed to eradicate lines. Fig. 2. Shows amount of skin removed with retention sutures. Fig. 3. Illustrates dissection beneath skin in operation for formation of dimple and manner of passing suture to invert skin (Miller). Fig. 4. Illustrates operation for formation of dimple after suture has been tied (Miller). Fig. 6. Curved line under chin shows line of incision; dotted area shows amount of dissection. Fig. 7. Shows amount of skin removed with retention sutures inserted. Fig. 8. Shows two crescent-shaped incisions extending from axilla to sternum. Shaded portion is removed, including all fat and breast.

patient that there will be slight scarring which, tho very slight and unnoticable, always results from a cutting operation.

The large pendulous breasts of women over forty are burdensome, embarrassing and subject to disease. Their removal is justified when they become a nuisance or diseased. In removing a pendulous breast for a non-malignant condition, I make a crescent-shaped incision under the breast, following the crease along the border of the sixth rib from the axilla to the sternum. The upper crescent-shaped incision begins and ends at the same points as the lower incision. The curve in the upper incision is short enough to bring it well above the breast. The convexity of both incisions is downward. The breast and roll of fat toward axilla is dissected out. Fat enough is left under the skin to fill the depression where the breast is removed (see fig. 8). Retaining the mattress sutures are inserted and edges of skin brought together with clips. The scar in this operation is very low and inconspicuous. When fat enough is left the bust has a full appearance.

In closing, let me say that I have tried to show some of the salient features of this class of work and to emphasize the possibilities of cosmetic surgery. I feel that it is a much neglected work, for which there is an ever growing demand on the part of business and society women of middle life. It is a duty every woman owes to herself and others to look as well as possible, and in this age of keen competition, with women entering business activities of our country in increasing numbers, it is obvious that cosmetic surgery must soon take its place with the other rapidly developing specialties of the medical profession, rather than to be discarded for the benefit of those untrained and unskilled.

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BARIUM MEAL STUDY IN GALL BLADDER DIAGNOSIS

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The impartial surgeon, gastroenterologist or internist who has had the privilege of association with a roentgenologist conscientiously performing barium meal study of the alimentary tract, has come to recognize the latter's methods as a differential medium par excellence in such lesions of the alimentary tract as gastric ulcer and cancer, or duodenal ulcer.

This recognition has been won because of the conviction of the roentgenologist that his direct signs were second in reliability and importance only to the surgical exposition of the pathological change. By direct signs we mean, in ulcer of the stomach, a filled crater or accessory pocket, in gastric cancer, a persistent characteristic filling defect, and, in duodenal ulcer, typical bulb deformity.

Surgical check of roentgen diagnosis has confirmed the roentgen signs when positive as being ninety or more per cent correct. When clinical history, physical findings, symptomatology and gastric chemistry are all combined in the hands of the most experienced clinical observer, he can boast of no such efficiency, and in the case of a general practitioner the result is an appalling frequency of incorrect diagnosis, if not elaborated by a barium meal study by a roentgen specialist. At best the findings under clinical methods are based on physiologic rather than on pathologic disturbance and as such are not ultimately differential.

The roentgenologist more than any other observer clearly perceives how infrequently gastric pathology is associated with gastric disturbance. Extra-gastric lesions are by far in the majority as symptom producers, both extra-gastric, but intrinsic to the alimentary tract, and lesions outside of the alimentary tract. Working as he is with a differential method of nearly mathematical precision, the roentgenologist has come to distruct the differential worth of other clinical methods.

Lesions of the alimentary tract causing gastric and gastro-enteric symptoms for which we are consulted are as follows in the order of their frequency. Gall bladder infection, duodenal ulcer, chronic appendicitis, gastric malingancy, gastric ulcer, pericolic membranes and intrinsic colon lesions such as ulcer, cancer, obstruction and so forth. As will be noticed the chronic gall bladder is mentioned as the commonest intra-abdominal infection causing gastro-enteric symptoms.[1] This may be substantiated by study of statistical reports from roentgen and surgical clinics.

While it is generally recognized that the roentgen diagnosis of gastric ulcer or malignancy, and duodenal ulcer is highly accurate much confusion still persists as to the role of the roentgenologist in gall bladder diagnosis. This is due mainly to the failure of the chronic gall bladder to exhibit a direct roentgen sign comparable to the ulcer crater, cancer defect or bulb deformity above mentioned. The only incontrovertible direct sign of gall bladder disease, i.e., the shadow of a stone or stones is too infrequently encountered in roentgen study. Primarily this is due partly to the fact that not all gall stones can be radiographed successfully, though most of them can, but in the main it is due to the fact that chronic gall bladder disease is not associated with stone in the vast majority of cases.

This circumstance has led to a considerable variation in the method of attack in gall bladder disease obtaining at various laboratories. The clinician will of course be easily convinced if we can demonstrate a gall stone shadow. This has led to an ardent attempt by the x-ray men to search for gall stone shadows to the exclusion of all other signs. Unfortunately the failure of such a search to find stones has for years hindered the progress of roentgen diagnosis of gall bladder lesions for it has raised a doubt in the mind of the clinician as to the value of roentgen examination. In other words he has been "sold" to the idea that a direct sign is paramount in gall bladder diagnosis when the importance and reliability of indirect signs as revealed by complete barium meal study is really much greater.

Therefore since gall stones are not necessarily a concomitant of every gall bladder lesion let us cease to over-emphasize the importance of searching for them and rely on a careful analysis of the indirect evidence of gall bladder disease which we can readily and consistently demonstrate by barium meal study. And here let it be emphasized that these objective findings even though indirect as regards primary pathology are nevertheless constantly to be found as a result of chronic cholecystitis alone, and are superseded in importance only by exploratory diagnosis during laparotomy.

Such a statement will be regarded as too enthusiastic by those unfamiliar with the possibilities of correct roentgen interpretation. First let us note that all chronic non-malignant gastro-enteric pathologies[2] are subject to symptomatic remission sand exacerbations. Further, early gall bladder conditions will produce roentgen deformities long before a clinical diagnosis can be arrived at and, finally, roentgen diagnosis is of necessity based on the demonstration of anatomical deformities the classification and interpretation of which comprise the roentgenologist's contribution to the diagnosis. These are objective signs, no clinical method of gall bladder diagnosis is based on objective signs. Since these deformities are persistent, though symptoms or clinical picture may vary, it is obvious that a roentgen diagnosis does not imply that all the recorded clinical signs are or should be present along with the deformities. Neither is his diagnosis disproved if there exists a wide variation between it and the clinical picture for, of the two, the roentgen signs are based on more exact observation and a roentgen diagnosis is only disproved by surgical exploration and pathological diagnosis of removed tissue.

If your roentgenologist reports gall bladder pathology remember that a discrepancy between such a diagnosis and the symptomatology does not invalidate the roentgen findings. A thoro study and a visualization of the patient himself as a clinical entity of many possible derangements will furnish the correct perspective of the importance of the chronic gall bladder in the patient's quest for health.

Granting therefore that a roentgen diagnosis of gall bladder disease cannot per se determine the relationship between such pathology and the presenting symptoms in all cases, but holding strongly to the belief that chronic gall bladder infection is widely prevalent and its recognition of great importance in gastro-intestinal diagnosis, and that of all pre-operative methods the roentgen study offers the greatest opportunity for diagnosis, let us examine into the roentgen diagnostic signs and secondary manifestations of chronic cholecystitis discoverable by barium meal study.

The roentgen evidence obtainable in chronic cholecystitis is as follows:

1. Pressure defect of superior margin of duodenal bulb.
2. Adhesive deformity of superior margin of duodenal bulb.
3. Permanent alteration of position of duodenal bulb.
4. Adhesive defect of second and third portions of duodenum.
5. Permanent alteration of position of second and third portions of duodenum.
6. Delay in second or third portions of the duodenum.
7. Defects of lesser curvature of stomach near pylorus which are not due to ulcer or cancer.
8. Defects of pyloric arm not due to ulcer or cancer.
9. Tonic contraction of plyoric antrum.
10. Displacement of pyloric antrum.
11. Gross deformities of fundus of stomach due to adhesion bands.
12. Adhesive defects of upper jejunum.
13. Permanent alteration in position of portions of upper jejunum.
14. Delay in upper jejunum.
15. Tenderness in gall bladder region.
16. Shadows typical of gall stones.
17. Shadows of pathological gall bladders.
18. Permanent angulation in the first third of transverse colon.
19. Dilation and stasis in ascending colon.
20. Pericolic membranes at or near the hepatic flexure.
21. Pericolic membranes of the entire transverse colon.

1. The first mentioned sign-pressure defect of the superior margin of the bulb of the duodenum is evidenced by a crescentic notch encroaching on the normally outcurving left margin of the bulb shadow. This was thought by earlier workers to be due directly to pressure from a distended gall bladder but is now known to be as easily caused by pressure from the lower margin of the liver as well and is constant because of fixation of the duodenum to gall bladder, or liver, or both.

2. The next sign; adhesive defect of superior margin of duodenal bulb is recognized by the loss of the smooth curved outline and its replacement by a jagged irregularity which in the majority of cases encroaches on the lumen, not adding to it, as does early duodenal ulcer.

3. The next sign permanent alteration of the position of the bulb, is evidenced by a sharp displacement of an imaginary axis of the bulb shadow usually to the left, often to the right and occasionally to the right and downwards.

4. Adhesive defect of the distal duodenum is found in the form of a loss of the symmetrical valvular markings and their replacement by a constant unsymmetrical outline. This may be observed on one or both borders.

5. The next sign, permanent alteration of the position of the distal duodenum, is found in many forms. The normal duodenum follows a beautiful horseshoe curve out from the bulb to the right and disappears behind the stomach. When deformed it may be acutely angulated one or more times, or may be pulled straight away from the shadow of the bulb along the

under surface of the liver, or displaced markedly to the left behind bulb and pylorus, or even high up towards the gastric cardia.

6. Delay in the second and third portions of the duodenum is best observed fluoroscopically though often it is demonstrated in the radiograph when a completely filled distended duodenum will be present in several successive films.

7. Defect in the lesser curvature of the stomach near pylorus is noted by several small irregularities of the lesser curvature such as a line drawn by a shaky hand would make. It is differentiated from cancerous defect which is of a punched out, finger print-like appearance and the defect of ulcer which adds to the shadow of the stomach on the lesser curvature.

8. Defects of both curvatures are a reproduction of the before mentioned shaky line appearance on the greater curvature also. Sometimes these defects are so gross as to cause an appreciable gap in filling between stomach and duodenal bulb.

9. Tonic contraction of the pyloric arm is frequently observed and shows a marked contrast between the general tonus of the fundus and the tubular contraction of the antrum.

10. Displacement of the pyloric arm is generally to the right and up so that the common fish hook form of stomach presents an undershot appearance as though folded back towards the lesser curvature.

11. Gross deformities of the fundus of the stomach due to adhesion bands are sometimes observed and usually show on the lesser curvature being frequently accompanied by incisure of the greater curvature and hour glass deformity.

12. Adhesive defects of the upper jejunum appear as do similar defects in the duodenum that is: with loss of symmetry of the valvular markings, a reduction in caliber of the area affected and an irregular outline of one or both margins.

13. Alterations in the position of the coils of the jejunum are readily noted when permanent, that is due to actual fixation. The normal coils tend to follow long graceful curves while the fixed coils are generally straightly horizontal or vertical in the abdomen and may show angulation at one or more points.

14. Delay in the upper jejunum is noted both fluoroscopically and radiographically. Sometimes it is possible to note one or more coils in the upper right quadrant remaining partially filled at the six hour post cibum observation when the stomach and duodenum are empty and the bulk of the meal is in the terminal ileum. These coils sometimes are well filled and distended; a condition which denotes obstruction sometimes spastic, sometimes mechanical.

15. Tenderness in the gall bladder region needs little explanation here except to say that a barium filled duodenum under the fluoroscopic screen renders differential localization of the tender point much more reliable than the ordinary physical examination.

16. The characteristic appearance of typical gall stone shadows has been well described frequently. Facetted or annular, they often show a denser periphery than center. Their shape is of course variable and they may be single or multiple. Their demonstration is of course most conclusive when they appear in an aggregation outlining the gall bladder. They must be differentiated from right renal calculus, enlarged calcific mesenteric glands or contents of the colon.

17. Shadows of a pathological gall bladder are of doubtful significance. The upper right quadrant is often a mass of various mottled shadows which by an imaginative observer may be interpreted to actually resolve into a gall bladder outline. The lower margin of the hepatic right lobe is almost constantly demonstrable and I have observed the shadow of the right kidney in a number of gastrointestinal flash radiographs. By means of pneumoperitoneum these latter organ's shadows may be made to diverge giving us a long triangular sinus normally free of shadows. Here occasionally the tip of a distended gall bladder may be seen but with disappointing infrequency. Such shadow however is the only one which may be properly diagnosed a gall bladder shadow.

18. Angulation of the colon immediately beyond the hepatic flexure is frequent in chronic gall bladders. The transverse colon in the average case follows a dependent curve from hepatic to splenic flexure. Loops and so-called kinks may be present, if it is redundant, but an angulation is usually associated with fixation to gall

bladder. The hepatic flexure may be drawn to the left. considerably when this fixation is present.

19. Dilatation of ascending colon needs no further explanation. It is often accompanied with persistent gassy distension of this organ. Stasis here is often found seventy two or more hours post cibum.

20. Membranes near the hepatic flexure cause a loss of symmetry of the haustral markings and usually affect only the upper margin though occasionally both may be involved.

21. Pericolic membranes of the transverse colon show similar deformity of haustration. Displacement and loss of the appearance of being swung from the flexures are also present.

At this point perhaps we might insert an analytical summary of the frequency with which the various signs are encountered. Such a summary might be misleading.

Suffice it to note then that deformities of the duodenum and colon near hepatic flexures are most common signs. Deformities of stomach, small intestine below the duodenum, gall stones and shadows of pathological gall bladders are less frequently encountered.

The misinterpretation of artefacts must be guarded against. Deformity of the duodenum and stomach by spine pressure when radiography in the prone position is resorted to is a common occurrence. A deformity to be diagnosed as an actual change in organic outline must be demonstrated constantly with both screen and multiple exposures. Its appearance may vary from time to time due to the different degrees of filling, peristalic action, or the position of patient at the instant of observation, but in general its location and extent will remain fairly constant if it is really due to a pathological condition.

Observations on the colon are attended with many sources of error if the appearance of one radiograph at one particular period of the examination is studied. Filling of different portions by meal often varies from hour to hour and no interpretation of defect should be made unless observations are had under varying conditons. Due to its ready mobility, being fixed in the majority of cases only at the splenic flexure and rectum, the colon will occupy many positions during the course of the examination varying with degree of filling, redundancy, position or muscular tonus of patient, etc. An angulation or fixation in an abnormal region are therefore most readily apparent if successive observations are made and palpation performed under the screen with the patient's abdomen properly relaxed.

To demonstrate the constancy and exact nature of deformities about the duodenum and pylorus it is necessary to make a careful differentiation of these deformities in order that the roentgen diagnosis agree with the surgical findings. The commonest error of interpretation is to construe the gall bladder deformity of the duodenal bulb as a duodenal ulcer sign or vice versa; in the majority of cases differentiation is possible as the duodenal ulcer is very characteristic. In ulcer both margins of the duodenum are deformed, and to a somewhat parallel degree, and with symmetrical alteration of contour. The duodenal ulcer bulb frequently suggests a geometric figure such as conventional silhouette of Christmas tree, Maltese Cross, bit of coral, etc. The gall bladder deformed bulb usually does not show such amount of deformity and most frequently presents a clean margin for the inferior border. Cases are met where the duodenal changes are sufficient to obliterate the bulb shadow. These are most difficult to differentiate but usually the occurrence of other signs will serve to decide for gall bladder pathology, if such is the case, while the absence of extra duodenal deformities in such cases is a strong differential sign of duodenal ulcer for, except in old perforated duodenal ulcer, the major deformities are localized in the duodenum in ulcer.

It is to be supposed that the changes in the pyloric portion of the stomach significant of ulcer or cancer are of a sufficiently distinctive character to differentiate them from gall bladder disease. However the local peritonitis induced by a chronic prepyloric ulcer is often confusing and a very careful differential survey is sometimes necessary to decide the character of the disease. As between early pyloric cancer and gall bladder changes about the pylorus the most likely error is to misinterpret indirect gall bladder signs as evidence of gastric cancer. Especially is this true because gall bladder lesions commonly occur in the fleshy patient and the palpation of pyloric induration or small tumor mass so truly characteristic of early cancer is impracticable in these individuals.

Other conditions of the upper right quadrant to be considered in a differential diagnosis are right pyonephrosis, right kidney neoplasm or other kidney diseases associated with enlargement of that organ and local peritonitis, disease of the head of the pancreas, mesenteric cysts, etc. These with the exception of renal pathologies are relatively uncommon. It is a wise precaution for the roentgenologist to have the report of a recent urinalysis before conducting a barium meal study and to be constantly watchful for retroperitoneal pathology.

Frequently roentgen observers have been led to class motor disturbances and spastic phenomena as differential signs in gastro-enterologic diagnosis. Unfortunately their differential value is limited as they are variously present as secondary manifestations in the several varieties of alimentary pathology. Their importance is not minimized here, however, nor is their recognition and report discouraged as it is not infrequently solely the symptoms caused by these secondary manifestations that brings the patient to the physician for relief.

The secondary manifestations most frequently encountered in chronic gall bladder disease are:

Esophageal spasm

(a) Slight cardiaspasm (intermittent).

(b) Chronic cardiospasm (continuous) without dilatation of with dilatation and formation of a diverticular pocket to the right.

(c) A short spasm and delay in the upper third of the esophagus, seen rather infrequently.

Gastric delay—

(a) Reflex pylorospasm.

(b) Mechanical obstruction at pylorus or duodenum.

Delay in upper small intestine, reflex inhibition of peristalsis sometimes resulting in spastic ileus.

Reflex, general, spastic colitis usually most marked in left half of colon.

Reflex, local, tonic contraction in distal colon sometimes only partially obstructing but at times forming a complete, acute obstruction. This is not to be confused with spastic constriction from local lesions such as pericolic membrane, ulcer or cancer of the colon.

The latter spastic obstructions account for the unpleasant gassy distension often suffered by the chronic gall bladder victim. The recognition of these secondary manifestations is relatively easy and no special description of the roentgen appearances will be attempted here.

The tonic alterations of the distal colon are especially interesting as they occur with such frequency. It is the exception for the roentgenologist to discover orthotonic descending and pelvis colons and the occurrence of spastic colitis with gall bladder disease is almost constant.

The thorough roentgen observer may help to shed much light on the etiology of gall bladder infections if he is watchful for primary foci of infections, especially in those regions where his evidence is the only proof of existence of chronic infection, viz.: apical dental granulomata and chronic nasal accessory sinus disease. Teeth and sinus radiographs should probably be a routine adjunct to barium meal study, as, the results of treatment are often disappointing when residual focal infection persists. The tonsils, prostrate, cervix and endometrium uteri are of course other focal danger points but inspection of these is part of the clinical observation. Where we shall place pyelitis and chronic appendicitis in the scheme of focal infections, is problematic as they may be primary or metastatic disturbances. A relationship or at least a simultaneous incidence is often observed between chronic appendicitis and chronic gall bladder, or chronic appendicitis and pyelitis, or all three. Sometimes relief of chronic gall bladder or appendicitis infections spontaneously clears up a chronic renal infection.

Unfortunately the greatest handicap the roentgenologist faces in securing material for investigation and the extensive observation that will render his position in gall bladder diagnosis conclusive is due to two sets of circumstances. First that the classical symptoms of jaundice, tenderness below costal margin, gas after eating, pain in shoulder or back are not always present to lead the clinical examiner to suspect gall bladder disease. Indeed, as mentioned before, the symptomatology is frequently due to the secondary manifestations alone and being recognized by the clinician under a symptomatic diagnosis of the presenting complaint, treatment is instituted without any effort to trace down the real condition. Secondly, due to the frequent remissions of all types of chronic gastric disturbances the roentgenologist is apt to meet an incredulous clinician when his findings are reported back and seem at variance with the patient's clinical picture at the time of observation. Those roentgenologists in a position to follow up their cases and re-examine later when gall bladder symptomatology is more typically present are able to prove their case.

As examples of the symptomatic variations in gall bladder disease the history of three recent cases will be briefly cited.

Patient A was attended for acute abdominal disturbance characterized by gassy distension and colicky pain in lower left quadrant. Moderate jaundice present. No particular tenderness under right costal margin. Diagnosis: Acute spastic intestinal obstruction. Treatment with hyoscine and atropine and local applications of hot turpentine stupes relieves the condition and a week later the patient was ambulant and underwent barium meal study. Roentgen findings were chronic gall bladder, with gastric delay and local spastic constriction in lower third of descending colon.

Patient B presented herself complaining of sacral backache continuously; especially annoying when seated when she had feeling as though "uterus were pressing on rectum." Vaginal examination was negative except for vaginismus. Rectal examination showed hard impacted fæces in upper rectum. Patient had resorted to laxatives and enemata for "years" for relief of constipation. Believing a spastic constipation was present a barium meal study was instituted. A single gall stone accompanying chronic cholecystitis was found and a severe spastic colitis in distal colon. Incidentally the stone was thought to be in the common duct but not obstructing it as it became coated with barium during the examination and flecks of barium persisted outside of the duodenal shadow after that organ had emptied.

Patient C had appendectomy for acute appendicitis three years ago. Now afflicted with melancholia, loss of memory, and maniacal depression. An annoying colitis with foul watery stools is present. Barium meal study revealed a chronic gall bladder lesion and an extensive pericolic membrane of the transverse colon with decided fæcal delay in that region.

These are presented to show the valuable aid that may be gotten from routine barium meal study as undoubtedly in each case the gall bladder infection was an important factor. Not that it is postulated that intestinal obstruction, sacral backache or mental symptoms are constantly of gall bladder origin but these examples serve to indicate that a more routine use of barium meal study will discover frequent gall bladder disturbances the treatment of which is important in relieving many diverse and atypical complaints.

And finally let it not be felt that the roentgenologist is alone useful in finding surgical conditions of the gastro-intestinal tract. His function is primarily the diagnosis; and the subsequent treatment is the province of his co-workers the internist and surgeon. Let them not doubt his skill or disbelieve the existence of the conditions he reports if he frequently finds a chronic gall bladder where clinical examination did not discover it.

CONCLUSIONS

Twenty-one signs of chronic cholecystitis encountered in barium meal study are reviewed. This is probably not a complete list but comprises the most accurate signs met with in present day methods.

The secondary manifestations of chronic gall bladder are noted and their tendency to be responsible for symptomatology emphasized.

The desirability of thorough search for primary focal infection is noted.

An argument is presented to justify the more routine use of barium meal study, and a just appreciation by the clinician of the roentgenologist's position in gall bladder diagnosis is sought.

A BRIEF ANALYSIS OF THE CASES HANDLED BY THE SALT LAKE CITY OFFICE OF THE UNITED STATES PUBLIC HEALTH SERVICE DURING THE PAST YEAR*

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Up until the eighth day of August, this year, the hospital division of the United States Public Health Service has assumed the work of the physical rehabilitation of the disabled ex-service men, having undertaken it in March, nineteen-nineteen. The so-called "Sweet Bill" which was signed by the President on the date indicated above created a United States Veterans' Bureau, which combined, in its provisions, the hospital division of the U.S. Public Health Service, the Division of Rehabilitation of the Federal Board for Vocational Education, and the Bureau of War Risk Insurance, the three agencies that had been functioning in connection with this post-war problem. The Veterans' Bureau now functions under a Director appointed by the President, and establishes fourteen regional District Offices, and provides for the establishment of 146 sub-offices with a central office located at Washington, D.C. The local office is now a sub-office of the 11th regional district.

The physical rehabilitation of the ex-service men has required the most careful examinations to establish diagnoses, followed by medical care and treatment for all disabilities which arose as a result of service in the military forces of the United States acquired in line of duty. These disabilities cover a very wide range and represent all sorts of injuries and almost every disease that adult man and women may be heir to during their lifetime. Of the cases handled locally, those classified as surgical are slightly in excess of the medical cases. This is probably due to the injuries and gunshot wounds received by the patients. Diseases of the lung are in excess of other diseases, and nervous and mental cases, ranging from neurasthenias to real insanities, show but a close second to diseases of the pulmonic tissue. Of these latter cases, it is not uncommon to find psychoneurotics who present elements of malingering.

To the local office has been delegated the authority to give to the claimant immediate care, even before the case has been acted upon by the Washington office, if there is a reasonable presumption that the treatment recommended is for a service disability. It sometimes follows that because of this early treatment provided, the claimant has presumed that his claim had been allowed, even before it had been forwarded. And it is not uncommon for a claim to be disallowed after a large amount of medical treatment, or a surgical operation has been provided the claimant. Disabilities have been entirely eliminated by surgical interference, or medical treatment, given immediately after the claim has been filed, and before final action has been taken in the central office.

Syphilis and gonorrhea are not compensable, and the rule is made that ex-service men are not given treatment for these diseases as they could not have been acquired in the service in line of duty. The exceptions to this rule are found, but the discussion of these cases cannot enter into this paper. An injury sustained as a result of a man's own misconduct, or a disease acquired in the same manner, would not be compensable, and no treatment can be given for such conditions.

During the past year some 10,000 examinations have been made in the Salt Lake office. There has been a gradual steady increase each month, with an average of about five new original claims being filed every working day. About 15 per cent of the total number examined represent hospital cases, either admitted for purposes of diagnosis or for surgical and medical care. During the past six months there have been provided to these claimants some 5,000 hospital days of observation, care, and treatment in the hospitals of this state. The first six months of the year the number of admissions and the hospital days did not total quite so high. There have been operated some 500 cases during the past year.

During the war and at the time of demobilization many cases were not given treatment which has been required since. This is due probably to a number of reasons, viz., lack of time, inadequate hospital facilities, and at the time of demobilization it very often happened that men refused to remain longer in service to receive the needed hospital care. During the days of active campaign only urgent cases were permitted to remain under treatment. It followed that during the earlier days of this work many old surgical cases presented themselves for repair; this included the operation for recurrent hernia, repair of abdominal wounds, operation for peritoneal adhesions, and not a few original operations for hernia acquired in service. More or less continuously have cases been operated for chronic appendicitis. Many nose and throat operations have been performed where the local infectious process has resulted in systemic manifestations.

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* Read before the Twenty-Seventh Annual Meeting of Utah State Medical Association, Salt Lake City, Utah, Sept. 13-15, 1921.

It has been found that nearly every man who walked for a long distance, especially over the stony, hard roads in France, carrying his heavy pack, now complains of flat feet, and these cases are being fitted with proper appliances and the same are being worn under as careful supervision as possible. Not a few cases of bone tuberculosis present themselves for treatment and reasonably good results have been obtained.

Some interesting observations have just been made by Dr. Case of the service from the compilation of statistics on fractures of long bones. In a broad way he makes the statement that for simple fractures of the long bones, the best functional results have been obtained by fixation with the Thomas splint method, with early passive movement of contiguous joints; in compound fractures with more or less destruction, early open graft, preferably autogenous, followed by fixation, gives the best results. Even in the presence of infecton early operation seems to be well worth while, and reduces very considerably the time of ultimate recovery with the least possible disability. There were comparatively a small number of amputations, even with the severe wounds produced by the high-powered shells.

It is noticed that today, less than three years after the ending of hostilities, only a small number of injuries of the extremities continue in the active or the sub-acute stage. Amputations as the result of original fractures have almost ceased and the remaining disabilities are largely functional in character. It is noted that fracture of the ulna followed by non-union is far more prevalent than that of any other bone in the body, but even so, less disability results from fracture of this bone than any other of the long bones. Fracture of the tibia is notoriously difficult to unite and its failure to unite results in considerable disability.

Acute surgical conditions and their treatment are the exception rather than the rule. Treatment for intercurrent affections is a privilege extended to all men receiving vocational training, and most of the acute surgical conditions arise among these claimants. Few cases of infection have required treatment, and a few cases arise demanding treatment for injuries received while the man is in training. Rather a large amount of surgical work has been done on the nose and throat, and occasional mastoid and a few operations on the eyes have also been performed.

In about 10 per cent of the cases examined a diagnosis of pulmonary tuberculosis has been made, with about one case out of three of these showing activity with the tubercle bacilli in the sputum and clinical signs and symptoms corresponding. The remaining cases of tuberculosis have shown various stages of quiescence, or the arrested stage. It has not been uncommon to find that some of the apparently arrested cases presented activity at future examinations. All active cases are offered sanatorium care in one of the hospitals provided by the service. Most cases from here have been transferred to Fort Bayard, N.M., or to Fitsimmons Hospital at Denver, Colo. Some cases refuse hospital care believing that they are able to provide themselves, at home, with proper care and treatmnt.

The incidence of tuberculosis as a result of the war cannot yet be determined. The maximum number of cases has not been attained and it is probable that the peak will not be reached for some little time. The patients are generally restive under restraint and very tired of everything that savors of the military. Only recently has any provision been made whereby such cases could be required to obey hospital regulations. Reasonable discipline as an essential part of treatment has not been recognized by the less serious minded patients. Provision is now being made to solve, or partially solve this great problem, and punishment may be meted out to chronic offenders who are often in the hospitals for other purposes than to get well. The securing of properly trained medical and nursing personnel has also been a serious handicap in adequately handling these cases in hospitals, and this is being met in some of the Government institutions by the conducting of schools in which personnel may receive the training essential to properly handling these cases.

Since demobilization a very wide variety of opinions have been expressed relative to effect of gas on the lungs in the so-called 'gassed cases." It is not known to what extent gassing acted as a material factor in the development of tuberculosis in our soldiers. The rigors of an offensive campaign were great. The soldiers were transported from place to place and entered into action immediately, under the greatest stress and strain, with the minimum amount of food and rest, going over the top for successive days, subjected to cold and wet, resting in the shell holes in the earth, without shelter through those long cold nights. "With his threshold lowered" as Crile puts it, with resistance at the absolute lowest point, could not the man have had a minute quiescent focus of tuberculosis activated because of these conditions? The process could have developed from the absorption of the irritating and lethal gases while the soldier was undergoing the conditions just discussed.

Lt. Col. Gilchrist, Medical Officer attached to the U.S. Chemical Warfare Service, has recently reported a summary of the findings of the Board of Medical Officers which convened at Camp Grant, Ill., and which had under consideration a large selection of so-called "gassed cases." Some 2000 gassed cases were examined, most of whom had been gassed for some five to eight months previously. Much dependence had to be placed upon the history given by the patient, and it was not always definitely determined that the men claiming to have been gassed were actually gassed, as the overseas record simply attested to the fact that the soldier had been gassed and mentioned his stay in hospital. It was the opinion of the Board, after taking into consideration all the evidence presented, that gas victims, irrespective of the type of gas, and severity of the attack sustained, presented no marked predisposition toward active pulmonary tuberculosis, or toward the reactivation of a healed or quiescent pulmonary lesion. It is further believed that gassed victims presented little evidence of material destruction of lung tissue. It was noted that gas victims with emphysema findings have a more protracted convalescence than those of the bronchitis group.

Colonel Gilchrist states further that he had formerly shared the widely held view that gas poisoning ultimately would cause a bad effect on the kidneys, but experience with these cases has not shown this to be true. In forty-four cases of nephritis carefully observed none alleged that their disabilities were due to gassing. Only 10 per cent of the organic and functional heart cases alleged that the disability was due to gassing. Of 444 cases of tuberculosis only 20 per cent claimed that gassing was responsible for their condition. Surgeons who have had a wide experience with gassed cases hold a widely varied view as to the effects of gas, but the majority appear to hold that gas poisoning leaves no after-effects on the human organs.

The nervous and mental cases are increasing in number. It is believed that claimants suffering with nervous and mental complaints represent the neuroses of ex-service men rather than the neuroses of war, and, as such, their symptomatology is becoming progressively more like that of the civilian neuroses. Almost every type of mental and nervous case has been seen, and many variations in complaints are noted. An element of pronounced importance and becoming continuousuly more noticeable is the presence of a recently acquired "pension neurosis." This may be regarded as the expected outgrowth of the recent spirit of the times. It now frequently expresses itself as the predominant factor in the symptom complex. So much has been said about compensation for the ex-service man, together with his care and rehabilitation, that the individual with feelings of inadequacy, or with real inadequacies, naturally gravitates in the direction where relief from the responsibilities of life have been promised. Sentiment and sympathy have been dispensed excessively and without adequate knowledge of its applicability to the individual soldier, or to the probability of its leading to a certain fixed state which is now afflicting many patients who are entering the hospitals of this service.

Dr. G. H. Benton has recently published an article on "War Neuroses" (Jour. A.M.A., July 30, 1921) from which we quote:

"Stimulated by the horrors of the World War, but without an adequate conception of the work that medical men are called on to accomplish, and with little or no rational understanding of the choice or of the refinement of the methods to be used, public sentiment, as was to be expected, went far afield. This is now very evident from the results in hundreds of individual cases. While some are benefited, others remain entirely indifferent; and to each soldier accrues such results as his individual capacity is capable of, which may be good, bad or indifferent.

The recent rapid growth of "Pension Neurosis" as expressed by the patients in this service is remarkable—much more noticeable as time advances and we recede farther from the acute neurotic manifestations accredited to the effects of warfare. In the vicious cycle occurs most assuredly a knowledge of the War Risk Insurance Act, which knowledge is being continuously more thoroughly disseminated among the ex-service men. A large number of men whose industrial efficiency during all their industrial years has never exceeded $30 per month are naturally quite satisfied to enter a hospital of this type on a complain of 'Nervousness" and "Weakness" and that they "Get Dizzy", and thereby to remain and to draw $80 per month compensation together with board, room, multiple free entertainments and other considerations.

Although these patients are conscious of overdoing their real physical infirmities they are not truly criminal malingerers because of their faulty understanding which makes them feel that such is their just due.

They will frankly tell you not only that the food is unpalatable and the beverages unpotable, but also that the hospital is an unendurable and inhospitable "joint." Yet, if you suggest that the hospital has probably done for them all that is possible and mention that their discharge is being considered, they will wire to their Congressman in Washington, stating that they are being thrown out of the hospital because their doctor does not like them—or some equally flimsy excuse, and thereby start a commotion along the whole official line."

It is believed that nervous and mental cases are on the increase but that their symptoms refer to neuroses of ex-service men approaching the civilian type, rather than to neuroses of war. It is further believed that many of these cases would be better if they were not placed in a hospital, and even in some cases the man would more readily overcome his mental or nervous disability if he were compelled to work and compete with the labor market.

The future of this work is uncertain, but it is believed that treatment will be required during the entire lifetime of every ex-srvice man with a disability traceable to his military service.

ANTISEPTIC DYE TREATMENT OF GONORRHEA IN THE FEMALE, WITH EXPERIMENTAL STUDIES*

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Every man who has had gonorrhea knows a sure cure. Those much vaunted sure cures, however, are absolutely lacking with the female. This lack of therapeutic information extends even into the medical profession. Scientific medicine seems to have almost ignored this subject as being beneath its dignity.

While the ideal gonorrheal treatment as a severe medical, potentially surgical case, demanding absolute rest in bed, etc., is recognized by the medical profession, the patient is not always so intelligent. She usually insists on being ambulatory. To her the principal inconvenience is the leucorrhea, with perhaps a slight burning on urination. She argues thus: why should she go to bed for an indefinite period, when others have recovered by a less exacting method?

To present an ambulatory treatment, founded on scientific facts and principles, is the purpose of this effort. The body overcomes infection by two routes, depending on the location of the causative organism. If it be on the surface, as in the various parasitic skin diseases, local applications suffice. If it be a systemic infection with merely a local manifestation, as in diphtheria, recovery is due to the system-forming antibodies.

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Gonorrhea may be either the local or systemic type of infection. In some cases of long chronicity the body has produced resistance enough to prevent penetration into the deeper tissues, but the surface organisms are still permitted to grow on. In this case the organism has usually become of such low virulency as to be classed as more or less of a saprophyte. This surface type closely resembles the parasitic skin diseases, and the patient can be classed as more of a carrier than a sick person. The opposite extreme is where the deeper structures as joints are invaded almost at the onset.

These facts can only lead to the deduction that, to obtain recovery in least time, bacterial destruction must be worked to maximum from both sides of the diseased membrane, i.e., local disinfection on the surface and antibody formation within.

The surface epithelium of the uterus and cervix is practically the same, except that the cervix is more in folds, and has more glands to harbor infection and pour discharge from. In multiparæ the squamous epithelium of the vagina extends varying distances into the cervix, sometimes two-thirds up. Difference in severity of infection and amount of discharge can be accounted for to some extent by these anatomic peculiarities.

Treatment, likewise, must take into consideration these anatomic differences. Swabbing the cervix merely irritates the surface of a few folds and does not penetrate the cervical muscosa folds, to say nothing of reaching the uterine cavity. This cavity still remains a culture place for furnishing reinfection to the lower structures.

If we ignore physiologic chemistry, to kill the organisms seems easy. Had we but a penetrating medicament with high bactericidal and no cellulicidal action, all would be serene. To find the medicament that would give the greatest bactericidal action with the least cellulicidal effect, plus greatest penetration, was the purpose of several series of experiments. Bactericidal actions of drugs were accepted from the works of others, and none tested out.

The injection of the uterus with penetrating medicaments is considered as reaching the greatest infective area. The danger of forcing the solution too high and carrying infection further can be met by only injecting a small quantity. This probably can be ignored, since anything carried in would be dead, if antiseptic action of the drugs used is to be recognized.

As a starting point a series of diffusion experiments were made to determine what drugs seemed to be most suitable, on a basis of dissemination in water. Ordinary clear glass, four ounce bottles were filled with water and stood in line. One-tenth c.c. of a 1 per cent solution of the drug to be tested was added at the bottom, and diffusion times and rates noted in the following order: acid fuchsin, methylene blue, gentian violet, acriflavine, mercurochrome.

Acriflavine and mercurochrome in strengths of one, two and four per cent showed that the strength of the solution did not influence diffusion to any appreciable extent. When left overnight, however, diffusion was complete, and the depth of the color varied with the original strength. The addition of five per cent glycerine to a five per cent mercurochrome solution caused diffusion to take place much more rapidly. Five per cent alcohol almost doubled diffusion rate.

Petri dishes containing cervical mucus and a piece of moist cotton, to hold vapor tension constant, were set up. A one per cent solution of the drug was dropped in so as to touch the edge of the mucus, but not mixed with it. Dissemination rates into mucus were noted in the following order: acid fuchsin, mercurochrome, gentian violet, acriflavine, argyrol, protargol.

To arrive at the amount of retention of the antiseptics in the tissues, different solutions of the same strength were put into empty rabbit guts and then washed out under running water. Argyrol and protargol washed out almost completely. Collargol was retained to some extent. Gentian violet and methylene blue left very good stains behind. Acid fuchsin, mercurochrome and acriflavine left a deep solid stain that went to the depth of the epithelium.

Deductions from the foregoing are that diffusion rates are not influenced by strength of solution to any great extent; different dyes have different diffusion rates; dissemination rate varies in water and mucus for the same drugs; rapidity of diffusion of mercurochrome is increased by the addition of either alcohol or glycerine. All other findings are overbalanced by acriflavine, acid fuchsin and mercurochrome sticking fast to the tissues for a long continued action.

To show the action of the medicaments on the human, the records were kept as to reaction to treatment in the case of a woman having both gonorrhea and syphilis. The different drugs in varying concentrations and quantities were injected into the uterus.

Woman's history: Intermittent public and clandestine prostitute, with periods of chastity. No children, tho several miscarriages. Tubes had been removed previously to contracting last gonorrhea. Cervix noneroded, nonstenosed or lacerated, with about average sized and shaped os. An abundance of discharge poured out which at times contained gonococci.

Acriflavine and mercurochrome in varying strength up to five per cent had practically the same effect, usually none at all. In quantities up to two c.c. nothing more than a semblance of mentrual cramp was complained of.

Protargol in any strength, even a quarter per cent, cramped severely, at times requiring atropin hypodermically to relieve.

Argyrol in any strength up to fifteen acted the same as the dyes. Stronger was irritating.

Collargol gave little more reaction than argyrol and stayed in the uterus as long as the dyes. However, it was not tested completely because of insufficient supply.

The other drugs were not tested out because previous washout experiments had eliminated them, or their antiseptic action was low.

Addition of glycerine five per cent made no difference in the reaction of any of the drugs. The glycerine has the additional advantage of acting as a preservative to prevent oxidation of the other medicaments and the disadvantage of lessening penetration.

For experimentation as to the penetration into living tissue rabbits were used with acriflavine and mercurochrome. Anatomically, the size of the rabbit's genitalia varies within wide limits, depending on the age of the animal, maturity, breed, virgin or multipara, and even the season of the year. The average female had a vagina of about twenty-five c.c. capacity when distended, and four times as long as wide. The rabbit uterus is double, with both cervices lying open in the vagina. There is no muscular ring forming an os as in the human. The uterus is about six c.m. long, and terminates in a tube of microscopic lumen.

Five c.c. of the standard solution composed of dye five per cent, glycerine five per cent, and water up to a hundred, were injected into the rabbit's vagina and the vulva held closed and elevated for fifteen minutes. On releasing the animal, varying amounts were expelled, usually with straining. No regularity of results could be attributed to the straining, retention or discharge of the fluid. Animals were killed one hour after injection.

Animals receiving mercurochrome showed on microscopic examination a deep staining of the vagina and cervices. Sections hardened in formalin and frozen showed penetration into the muscularis. Sections of the uterus at varying levels showed an uniform deep staining in the first centimeter. The second centimeter was poorly stained. The third centimeter had areas of no stain. The remainder had decreasing areas of stain till at the tubal junction little was to be found. One animal, however, had a line of stain running up into the tube. In all cases the dye penetrated into the muscularis where any was to be found on the surface. Animals killed two hours after injection showed uniform and deeper penetration for three and four centimeters up the uterus, and some into the tube.

For showing action on reproduction in the living animal later, two multiparæ were injected, one with mercurochrome and the other with acriflavine. Both refused to breed one week later. Two weeks after the injection, mercurochrome bred and acriflavine refused. Mercurochrome had one young from this mating, where previously she had had seven and eight. Six weeks after her injection acriflavine took. No young resulted from this mating, however. Nor have any come yet, the six months have elapsed and she has been bred numerous times. The conclusion is that the medicine injured the genitalia in some way so to prevent conception, most likely sealed the tubes up.

Mercurochrome died five months after her injection without a second breeding. Accordingly, another rabbit was injected with mercurochrome and had her usual number of young from a mating made one week after injection. This leaves the question of tubal injury from mercurochrome unsettled, tho inclined to consider it nil. Pregnant animals injected with either dye, when pregnancy was one-fourth along, went thru to full term without mishap of any kind.

Animals injected with acriflavine gave practically the same penetration results as those with mercurochrome. We were unable to obtain entirely satisfactory results, because of the dye not staining so deeply as the red, and also spreading under the operation of cutting.

Dead tissues as omentum, gut and uterus stretched flat all worked unsatisfactorily, except to show that the dye crept up the folds of the membranes. Dye applied at the edge of cut surfaces entered the blood vessels and spread to all parts of the tissue by capillary attraction, thus staining everything deeply.

Dead genitalia removed intact and injected under the same conditions, gave practically no creeping into the uterus, unless massaged. From this the deduction is made that dissemination is largely due to manipulation of the animal when injecting, and a peristaltic-like action of the genitalia.

Returning to the patient, the following gonorrheal treatment is carried out. The vagina and cervix are wiped dry and the mucous plug removed from the cervix with a suction syringe. A Keyes instillating catherer, shaped to the ordinary uterine curve, is used to catheterize the cervix. This is usually inserted one centimeter, the distance being measured by an attached rubber collar. A Luer syringe is attached and one c.c. as a standard quantity is slowly injected. Catheter is allowed to remain as a plug for about five minutes and, on it being removed, a tampon left against the cervix. The patient is instructed to remove this tampon, and douche four hours later. The urethra likewise is injected, using an air pressure syringe, and the same medicament as in the cervix. This injection is made by holding the nozzle tightly against the meatus and gently forcing the solution into the bladder. The patient is also shown how to insert some silver salt bougie into the urethra, and does this twice daily.

Under this injection treatment the medicine remains in the uterus indefinitely. Have found it coming out to color a tampon two weeks later. By this we know that we are obtaining long continued action. Additional treatment depends on the patient and circumstances, no two cases being alike.

With the average case, under this treatment, the discharge disappears like magic for two or three days, then returns to some extent, followed by a gradual but consistent improvement. This treatment, however, is not without limitations. Some patients, especially those with malpositions or stenosis of the os, have most severe cramps when anything foreign is put into the cervical canal. If a few dilatations do not speedily relieve this condition, the case should be classed as unsuitable.

In all unsuitable cases the operation of cone amputation of the cervix still seems to be the treatment of choice. After this operation, if infection continues, the injection treatments can be taken up to complete the cure.

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DIAGNOSTIC PROBLEMS IN PULMONARY TUBERCULOSIS

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Much has been written about mistakes in the diagnosis of pulmonary tuberculosis, particularly with stress upon the frequency with which it is overlooked, and, while I also desire to comment upon that phase of diagnosis, I especially want to emphasize some sources of error in diagnosing tuberculosis when it does not exist.

It is the experience of all tuberculosis hospitals and sanatoria that a large per cent of cases sent for treatment with a diagnosis of tuberculosis are found after admission to be either non-tuberculous or to be suffering from diseases other than tuberculosis. An unusual opportunity was given me to observe mistakes on a comparatively large scale during my military service in the recent war, especially at one of the largest Army Tuberculosis Hospitals where as high as twenty-five per cent of some two hundred to three hundred admissions monthly feeding a service of 1600 to 1700 patients, were found to have either insufficient evidence to justify the diagnosis of pulmonary tuberculosis or they were found suffering from other diseases. I believe it quite safe to say that it is the experience of most tuberculosis institutions that about twenty-five per cent of admissions prove non-tuberculous after observation and, while twenty-five per cent mistaken diagnoses in cases sent us was a fair average, it was nevertheless higher than we expected, because nearly all our cases came to us after having been under observation for more or less prolonged periods in base and camp hospitals and the diagnosis of pulmonary tuberculosis was authorized, or made in most cases by qualified internists, and in many cases by tuberculosis specialists before the cases were transferred to us. However, soon after our entrance into the war, during the examination of registrants reporting to mobilization camps for military service, it became evident that the question of what constituted pulmonary tuberculosis of clinical importance either was not very certain in the minds of the medical profession, or the methods of diagnosis were seriously at fault, because, of the first million men sent to mobilzation camps supposedly able-bodied and "fit to fight," 11,000 were rejected on account of pulmonary tuberculosis. Perhaps 11,000 is not a large number to find among a million men but it is too large when one considers that these men had already been examined and passed by local draft and medical advisory boards, the personnel of which constituted representative members of the medical profession, selected because of their diagnostic sagacity. Admitting that many draft examinations were carried out in a hurried and, consequently, perfunctory manner, and that there was little or no opportunity for extended observation, especially in hospitals, yet the fact that twenty per cent of those rejected at Camp Lewis (which is an example of what obtained elsewhere) had extensive manifest lesions with cavity formation and tubercle bacilli in their sputum, compelled us to believe at the time that either the medical profession was guilty of not taking advantage of well known laboratory methods which would have excluded at least open cases, or there was lack of knowledge regarding the proper interpretation of physical signs, and sputum examination was considered unnecessary. But, when one finds internists and supposedly qualified tuberculosis specialists diagnosing tuberculosis and recommending hospital care when no evidence of its existence can be found and at the same time either other diseases or some slight variation from the normal chest is found, one is relentlessly driven to believe that chiefly two faults are at play; namely, the internist and frequently the specialist often attribute a value to certain methods which is without justification, or the value is misunderstood and overestimated and he is brought to false conclusions. In fact, there is a pronounced tendency at the present time on the part of some clinicians to overemphasize the value of some of the newer diagnostic procedures. On the other hand, the general practitioner underestimates and misunderstands the value of reliable methods and even neglects many of the older methods of diagnosis which are of known value. Thus, the internist diagnoses too much tuberculosis, mistaking other diseases for it, while the general practitioner recognizes too little tuberculosis, mistaking it for other diseases. In fact, it would appear that as far as the diagnosis of at least early pulmonary tuberculosis is concerned, instead of its becoming more simple, it is becoming more complex. Bardswell[1] reports findings on 158 cases admitted to Brompton and Victoria Chest Hospitals, London, for observation. One hundred and twenty-one were sent as suspected or questionable cases by tuberculosis officers. Among those, ninety-two proved non-tuberculous, after observation. Thirty-seven cases, were sent in diagnosed positively tuberculous by tuberculosis officers, yet thirty-two proved after study to be non-tuberculous. It is indeed disconcerting that of the one hundred and fifty-eight cases diagnosed tuberculous, or suspected, only thirty-four should be found to have sufficient evidence to justify the diagnosis and even in ten of these the disease was considered arrested and not requiring treatment. James Alexander Miller[2] states that as high as twenty per cent of the cases referred to his tuberculosis wards at Bellevue Hospital are found non-tuberculous.

Mistakes in the diagnosis of pulmonary tuberculosis occur mostly in two classes of cases. The first class comprises those cases diagnosed incipient pulmonary tuberculosis because of a suggestive clinical history or symptom complex with a positive cutaneous or intradermal tuberculin reaction or a positive complement fixation but with essentially negative or borderline lung findings, often only roentgenologically demonstrable and the mistake lies in attributing the sometimes rather marked symptom complex to the slender physical and roentgenological evidence on the basis of biological and serological reactions. In other words, the mistake is due to overestimation of the value of physical and roentgenological findings as well as misinterpretation of serological and biological tests.

The second class present marked lung changes diagnosed tuberculous or, on the other hand, the tuberculous nature overlooked and the error more frequently is one of misinterpretation of the physical findings alone, but often both physical and roentgenological findings are misinterpreted and resort to usual laboratory procedures is neglected.

With reference to establishing a diagnosis of incipient pulmonary tuberculosis in the first class of cases, namely those with essentially negative or borderline lung findings combined with a suggestive history or symptom complex, the greatest confusion arises, for because of the difficulty of diagnosis in these strictly early cases, there has been a constant tendency on the part of clinicians to bring out new serological, biological and chemical tests as well as to describe new signs or devise new procedures of physical diagnosis; so not only is one confronted with an array of laboratory procedures for determining early and active tuberculosis but innumerable ultra-refined methods of physical diagnosis, especially percussion, have been brought out. Various kinds of breathing, considered pathognomonic of early tuberculosis have been described. However, with reference to physical examination methods, no matter how refined, one must remember that the physiological range of normal disparities is so great that one cannot expect percussion or auscultation to reveal questionable deviations from the physiological, bordering on pathological changes.

Laennec, the father of modern physical diagnosis, taught a century ago that the diagnosis of strictly early apical tuberculosis could not be made with certainty prior to the occurrence of rales, because discrete tubercles in surrounding healthy tissue give no characteristic changes which reveal their presence until the advent of rales. Laennec's views held for seventy-five years until Grancher asserted that granular breathing (that sputtering form of respiratory murmur which suggests the co-existence of rales) was the first change in early apical tuberculosis. Later, however, after a study of the lungs of 4000 children, he modified his view and taught that feeble inspiration was the first sign of apical tuberculosis, at least in children, followed later by granular breathing. Finally, Grancher maintained that the sequence of ausculatory signs in early tuberculosis were first feeble, followed by granular, cogwheel, harsh, and then bronchovesicular breathing. Grancher's doctrine has influenced clinicians to this day.

Let me refer to the text books on general medicine, physical diagnosis and tuberculosis. German authorities, such as Strumpell[3], Turban[4], A. Frankel [5], Brecke[6], Bandelier and Roepke[7], all agree that in many cases the earliest sign of apical infiltration is a change to weak and rough (granular) breathing. But Sokolowski[8] states rude breathing (rough and granular) is the first sign; Gerhartz[9], prolongation of expiration with roughness, sharpness or weakness of inspiration; G. Klemperer[10], sharpened vesicular breathing; Aufrect[11] weak breathing; Felix Klemperer[12], impure and rough, then cogwheel, then sharpened vesicular especially the expiration; while Deycke[13], asserts that the earliest auscultatory sign is sharp and rough or weak breathing.

Of the French authors, Piery[14] states that the most important physical sign of early tuberculosis is the occurrence of rales over a limited area in the apex. According to Piery' observations, granular breathing is found in abortive lesions but he admits that at times weak breathing precedes the occurrences of rales.

Among the English authors, Latham[15] writes

"For all practical purposes we must diagnose pulmonary tuberculosis when we find diminished resonance and increased resistance to the finger, associated with the presence of persistent crepitations or fine rales in these situations in which tuberculosis usually begins." Less[16] describes "local areas of dullness with defective air entry as the earliest sign." Riviere[17] finds granular breathing more common. Osler[18] regards feeble breathing as the most characteristic early sign and states at times it may be harsh and cogwheel on deep breathing.

Of American writers, Lawrason Brown[19] states the first change to be detected is often some harshness and increased loudness but in most cases there is constant increase in loudness or elevation of the respiratory murmur with prolonged high pitched expiration. Minor[20] regards rough vesicular or granular breathing as the earliest sign. Pottenger[21] states that there are no definite changes in the respiratory note which are always present in early tuberculosis. Flint[22] finds feeble breathing, then bronchovesicular breathing; Fishberg[23], weak breathing; Norris and Landis[24], granular breathing; Hawes[25], high pitched inspiration with or without interruption followed by an abnormally prolonged high-pitched rough expiration; Musser[26], bronchovesicular breathing, sometimes jerky; Wilson[27], rough breathing then feeble inspiration, followed by cogwheel, vesiculo-bronchial and finally bronchovesicular breathing; De Costa[28], that it may be either feeble or distant or loud and harsh, while Cabot[29] considers that in the early stages of incipient tuberculosis, there may be no recognizable signs but the earliest sign, according to his experience, is the presence of crackling rales.

I could quote others, but it is useless. This multiplicity of views is confusing and one becomes bewildered when one considers the topographical distribution of normal signs, bearing in mind that what is an abnormal sound in one place is a perfectly normal one over another place. Wilson says "Bronchovesicular breathing is perfectly normal in the right intraclavicular region near the upper sternal border and near the dorsal vertebrae." Dr. Costa says that puerile or sharpened vesicular breathing is heard normally over these same areas and the base posteriorly, while Sahli[30] says that physiological bronchial breathing is at times heard over more or less the entire lung and may be intensified or diminished or caused to disappear depending upon the position of the mouth.

In short one must admit that either not all these authors can be correct in their views regarding what constitutes the earliest ausculatory changes in incipient tuberculosis or incipient tuberculosis represents such a variety of signs and sequence of their occurrence in different cases that there is no one pathognomonic type of breathing.

I do not wish to be misunderstood as meaning that the previously quoted authorities are willing to make a diagnosis of incipient tuberculosis on breathing changes alone. Furthermore, I do not wish to discourage efforts to make an early diagnosis. I merely introduce their views regarding breathing changes they find most common in early apical tuberculosis to illustrate the great difference of opinion because too many physicians and I fear some internists and tuberculosis specialists are putting unjustifiable confidence in some particular type of breathing they have fixed in their minds as indicative of incipient tuberculosis.

Undoubtedly, another source of confusion is the difference of opinion regarding just what constitutes the various types of breathing, especially the modifications of vesicular breathing and even bronchovesicular breathing. The personal factor of the examiner enters so largely into the discussion regarding the name he is going to give the type of breathing he hears. Much has been taught didactically of pitch, duration, and intensity of sounds in differentiating the various types of breathing. However, the average medical ear can neither appreciate nor apply these principles. What one man calls high pitched another calls low pitched. One man calls the breathing over an auscultated area rough vesicular, another says it is sharpened and a third says it is bronchovesicular. Every clinician has more or less his own standard and conflicting opinion is the inevitable result.

(Continued in July Number)

PAINLESS LABOR

Clarence A. Smith, M.D.
SEATTLE, WASH.

At times one has occasion to attend a woman in labor who states that she has borne children without the discomfort of labor pains. A careful inquiry into the case usually discloses this to be an exaggeration. Her pains have been so slight that after a lapse of time she declares that she had none. When one carefully observes a patient, however, during the course of a labor and by personal knowledge verifies the fact that she has gone thru this period with no indication of subjective or objective pain, the fact is one worthy of record. This is the explanation for reporting the following case.

Mrs. G., age 38, IV-para, consulted me on Aug. 17, 1921. She stated that she never had pains with her confinements. Careful questioning disclosed that she meant this literally. On one occasion, when she informed the attending physician that she believed herself in labor, he could not credit the statement in the absence of the indications of labor. Consequently he left her and the baby was born very soon after his departure.

Figuring from the last menstrual period, it was estimated she would be confined about September 15. Physical examination showed pulse rate 120, normal heart, blood pressure 130-80, position of fetus L.O.A., fetal heart 150.

On September 15 at nine a.m. patient had slight bloody discharge which was repeated at five p.m. I saw her at seven o'clock. She said at times there was slight pressure in lumbar and inguinal regions, but no pains. She was sent to the hospital where I was called at 8.15. The nurse stated that labor contractions were apparent but she gave no indications of experiencing pain. While scrubbing hands the membranes ruptured and the head appeared between the labia. When she was being draped she exclaimed "the head is rolling out," and the baby was at once delivered. During the period of labor she showed no indication whatever of suffering any discomfort. She joked and chatted with those about her with no cessation during contractions, as is customary in ordinary cases. After delivery the usual uterine contractions followed, with one of which the placenta was easily expelled. At that time she complained of pain during the manual compression of the uterus. She had the usual uncomplicated postpartum experience. The baby was cyanotic and remained so with rapid, shallow respirations, presenting the ordinary conditions of a "blue baby," death following on the second day.

An explanation of this painless delivery cannot be offered. We know that the uterine contractions which constitute delivery are instituted within the uterus itself, as proven by the fact that after the uterine nerves are severed labor proceeds without interruption. Labor is essentially a reflex process. The belief is held by some that it is not dependent upon the stimulation of certain nerve centers but is instigated by some local stimulus in the form of mechanical impacts or of a hormone contained in the blood stream. Another theory is that the stimulus is in the fetus itself. Certain of its excretory substances fail to be eliminated and attack the uterus directly. Whatever theory may be held, the actual mechanism is still in a state of doubt.

The pains which the patient experiences are the result of a number of factors. The first pains are caused by a violent stimulation of the uterine nerves, whose delicate endings are injured by the strong compression of the uterine walls. Pain is also caused by a resistance of the brim and by a strain of the attachments of the uterus. It is also aggravated by the pressure of the heavy uterus on the nerve plexus in the pelvis and on the nerves of the vagina by the presenting part. Pain is also derived from the contraction of the abdominal muscles which aid in expulsion. It is also suggested that another cause is spinal neuralgia, resulting from an anemic condition of the lower cord and meninges. Why in the case described above the sensation of pain should have been abolished in all these possible locations for its origin, is a question which no attempt is made to answer.

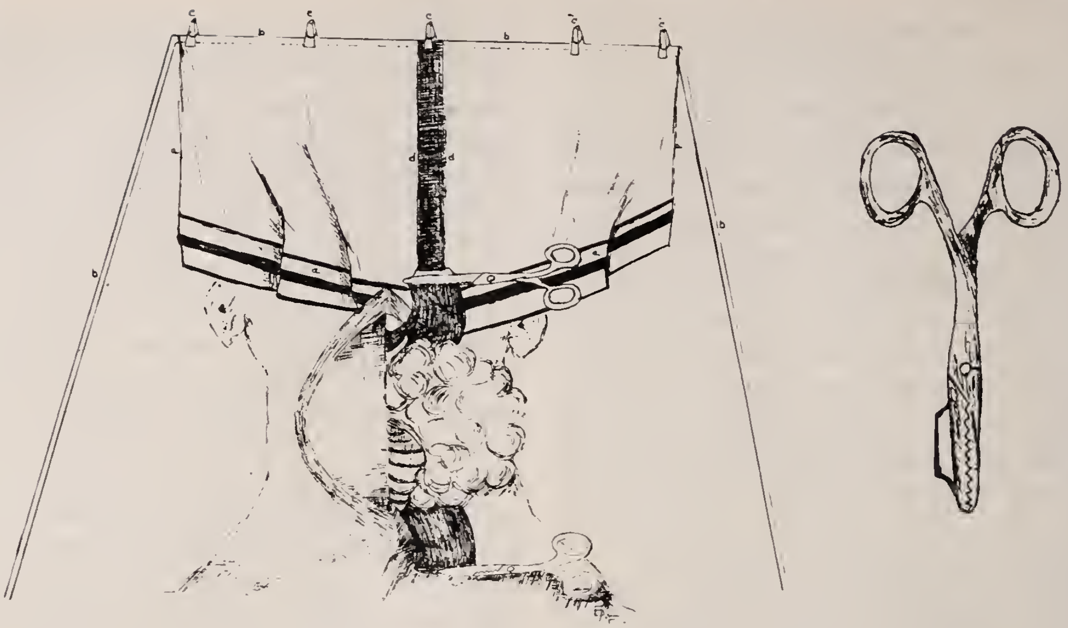
HELPFUL TECHNIQUE FOR OPERATIONS ON THE THYROID GLAND

By J. B. McNerthney, M.D., F.A.C.S.
TACOMA, WASH.

Too often the assistant in his endeavor to properly retract the tissues in goitre surgery is maladroit and in the way of the operator; besides unnecessary pressure and trauma in toxic goitre may court disaster.

The scheme shown, Fig. 1, will be found useful. It eliminates extra help and makes easy the insertion of the fingers under the gland, because of the absence of metallic retractors. Uniform retraction is easily sustained without pressure or injury.

The divided skin and platysma are towel clipped together. Then the towel is veiled over the patient's face and Kocher's goitre rack and pulled taut, lifting skin and platysma well up. They are pinned above to the goitre rack and out of the way for further dissection.



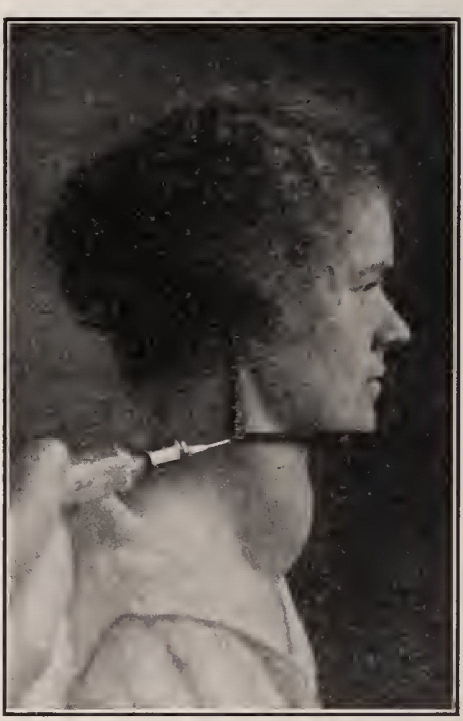
(a) Towel attached to the skin and pulled taut and pinned to the Kocher rack above with clothes pin; (c) (d) strip of gauze passed thru slit on goitre clamp and pinned to the rack above, or the gauze may be passed thru a ring of the forceps, and the same principle applied.

The longitudinal line of cleavage is selected in front of the trachea. The finger is inserted and sweeps under the sterno-hyoid and sterno-thyroid muscles and over the surface of the gland, separating, exploring and locating a point in the upper area of the superior carotid triangle on the anterior margin of the sterno-mastoid muscle.

At this point, through a newly made opening is inserted the blades of the goitre clamp, the handles pointing away from the mid-line.

The anterior muscles are now divided. Through a slit in the goitre clamp is passed a piece of gauze or bandage and the divided muscles pulled well up and taut and pinned to the metallic bar of the rack above. For fixing the gauze to the rack, the writer, for years has used the simplest and best instrument, an ordinary spring clothes-pin.

Successful local anæsthesia in goitre surgery is based on a thorough knowledge of thyroid anatomy, especially an exact knowledge of the nerve supply to the cutaneous surface area, the muscles of the neck, and finally to the gland itself.



At the intersection of the two lines as indicated by point of hypodermic needle to exact location of the nervus cutaneus colli is determined.

The surgeon always depends on two possibilities to produce local anæsthesia, varying with the part of the sensory nerve supply with which the anæsthizing solution comes in contact—conductive anæsthesia, where the solution intercepts the whole nerve trunk; infiltration anæsthesia, where the solution only reaches the peripheral nerve endings.

A well formed mental familiarity with the topography of the thyroid gland and the course and wanderings of the various nerves to this area prepares the surgeon with a positive and indispensable guide to the points where they may be intercepted. On both sides of the neck the cervical plexus gives origin to the superficial cervical nerve (nervus cutaneus colli). This nerve furnishes an excellent example of a type of a nerve where the trunk may be easily and readily anæsthized by placing, with a small long hypodermic needle, the solution directly on the nerve where it ascends the posterior margin of the sterno-mastoid muscle.

Locating and blocking the nervus cutaneus colli is determined by what may well be called squaring the region. Previous to the operation, drop a vertical line from the center of the mastoid process, meet this with a transverse line from the mental protuberance of the inferior maxillary bone. Exactly at the intersection of the two lines, within an area the size of a ten-cent piece, will be found the nerve. The exact spot is marked with silver nitrate or any other method of choice.

QUINIDINE IN AURICULAR FIBRILLATION

By Kenelm Winslow, M.D.
SEATTLE, WASH.

The therapeutic effect of quinidine in auricular fibrillation is sometimes as dramatic as that of pituitrin in arresting a long standing polyuria in diabetes insipidus. As it is at present quite the latest thing in cardiology the following brief report may be of interest.

S. V. P. Male. 45 years old. Had rheumatic fever at the age of 24, followed by mitral disease. He has had a number of attacks of quinsy and tonsillitis since childhood. He came to me in March last for extra systoles with flatulence which disappeared after regulation of the diet. He was a very large man weighing 222 lbs. but was gradually losing weight by moderate exercise and diet.

The apex was in the fifth interspace ten centimeters to the left of the middle line and there was not the slightest sign or symptom of decompensation. There was a loud blowing systolic murmur present at the apex.

Muscular pain was felt in the lumbar region and, in view of chronic infection of the tonsils, tonsillectomy was advised. This was performed skilfully under local anesthesia by Dr. E. J. Stubbs, but with great difficulty owing to the repeated attacks of quinsy. About one week later after the usual inability to eat and consequent weakness, and following an unusual climb in visiting a relative, the patient began suddenly to suffer from violent palpitation.

Next day on examination auricular fibrillation was found, the heart beating so tumultuously that it shook the whole trunk. The pulse rate was 140 at the apex and only 80 at the wrist. A pulse deficit of 60. Tracings were taken with the ink polygraph which confirmed the diagnosis. The patient was at once sent to a hospital and 6 drams of tincture of digitalis were given in the next 48 hours. The rate of the heart was reduced to about 100 while the rate of radial pulse was still about 80, but the fibrillation continued. After two preliminary 3 gr. doses of quinidine sulphate were given to test for hypersusceptibility (some patients are readily poisoned) six grs. were given t.i.d. for two days. At about 9 p.m. on the second day the palpitation suddenly ceased and the patient was himself again on the instant. The rate at the apex and radial artery was the same, about 80, and all irregularity had disappeared. It was almost as though a trolley had slipped and went thrashing and banging about on an overhead wire, above a running car, and then should as suddenly slip into place again.

Next morning the pulse was perfectly regular and has been so since except for some occasional extra-systoles associated with flatulence. The dose of quinidine was then cut down to 3 grains t.i.d.—The digitalis, after the first two days, was diminished to half a dram once daily.

This was a peculiarly favorable case for quinidine as there was no evidence of loss of compensation at any time, the patient being only distressed by the violent palpitation. Heretofore not more than 5 per cent of the cases of fibrillation could be stopped, after once appearing, but now about half the cases yield to quinidine medication.

Quinidine in depressing the heart muscle is inadvisable in decompensation, or until this has been overcome by digitalis. The latter drug is still the most important in fibrillation but in about one quarter of the cases quinidine is indicated. Dyspnea, weakness and precordial distress, together with tinnitus, should speak for discontinuing the use of quinidine. How long fibrillation will be stopped by quinidine is problematical and depends upon whether decompensation is restored. The continuation of small doses, gr. 3 t.i.d., will aid in preventing return of fibrillation. The ordinary routine treatment consists in beginning with a few preliminary doses of 3 grains, increasing to 6 gr., and, in the course of 10 days, to 15 gr. t.i.d. of quindine sulphate.

NORTHWEST MEDICINE
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EDITORIAL

THE SURGEON AS INTERNIST

The title is not intended as a paradox. Most pathology upon which internists rely is derived from the revelations of the dead house. Such pathology offers little light in the matter of treatment. Mackensie, in his Future of Medicine, emphasizes the necessity for studying disease in its earliest stages in order to obtain knowledge that may enable us to cure or alleviate morbid conditions.

Thus it has come to pass that the surgeon in his daily study and handling of living pathology has been able to illuminate many fields of internal medicine more successfully than many medical research workers of the past.

In the matter of cirrhosis of the liver W. J. Mayo's paper[1] is a model of simplicity in classification based on his unique knowledge of living abdominal pathology. For example, he finds that the liver is always enlarged in biliary cirrhosis from obstruction, whereas the pathologists find that the liver is small—the difference between the pathology of the living and dead. No more enlightening and terse exposition of nephritis has been written than that by the same authority on Hematogenous Infections of the Kidney[2] in which he likens the kidney to a cream separator in filtering out bacteria from the arterial blood while the venous blood is returned to the general circulation. For our knowledge of the acute fulminating hematogenous infection of the kidney we are indebted to a number of original and epoch making papers by another distinguished surgeon, Brewer[3]. Moreover W. J. Mayo has also thrown much light on diseases of the spleen. In relation to splenic anemia he states characteristically that "incomplete knowledge is essential to diagnosis. If we know the cause of splenic anemia it is not splenic anemia." Furthermore Mayo has added much to our knowledge of hemolytic jaundice and its remarkable cure by surgery. And now comes the leading English surgeon Moynihan with his recent book on the spleen[4].

In this the etiology, pathology, pathogenesis, symptomatology and treatment of disorders associated with, or dependent upon, disease of the spleen are portrayed with a masterly touch not to be found in any other work. The abdominal surgeon of large experience has this advantage over the internist that he can verify the diagnosis by direct, personal observation of the living pathology. In so doing he might easily excel the internists in diagnosis were it not for many medical diseases simulating abdominal surgical lesions. Thus pneumonia, diaphragmatic pleurisy, abdominal crises of tabes, sclerosis of the abdominal aorta, spondylitis and lethargic encephalitis are often mistaken for abdominal surgical diseases and, in our experience such mistakes have led to celiotomy by able surgeons owing to faulty diagnosis.

Otherwise the role of internist might be wholly superseded by the surgeon in abdominal diagnosis as well as in operative treatment.

Coffey in his most admirable paper on The Acute Abdomen[5], very graciously states that the "modern internist is one of the most useful and finished products of medical science" and yet is unfitted for diagnosis of *abdominal emergencies* on account of "his methods of deduction." We are inclined to agree with him but rather because such cases ultimately gravitate to the surgeon who is therefore apt to be more expert in the diagnosis of acute abdominal lesions because he sees more of them.

His training also tends to make him deal with them more promptly. —K. W.

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[1] Jour. A.M.A., 1918; lxx, 1361.
[2] Jour. A.M.A., 1919; lxxiii, 1923.
[3] N. Y. Med. Jour., 1915; ci, 556.
[4] The Spleen. Sir B. Moynihan. W. B. Saunders, 1921.
[5] Northwest Medicine, Jan., 1921.

PROGNOSIS IN ESSENTIAL HYPERTENSION

Some twenty years have elapsed since we began estimating blood pressure with a Riva Rocci instrument. In those early days many patients were nearly driven into an untimely grave by doctors through misinterpretation of the clinical significance of hypertension.

And, in this connection, we wish to speak of so-called essential hypertension. Its precise etiology is unknown. This condition appears more often in the fifth decade, in either sex, accompanied by normal renal function and urinary findings. An attempt is made to further classify cases into arteriosclerotic and climacteric, in women, but other signs of arteriosclerosis are often wanting and hypertension is frequent in men at the climacteric age.

In essential hypertension the systolic pressure is chiefly involved, the diastolic being usually not above 100.

While it is easy to put these cases into a systematic classification the truth is that many do not stay so put. These cases of essential hypertension are described in text-books as progressing till dilatation and failure of the heart and death ensue. As a matter of fact the prognosis is often not at all bad for longevity with moderate hypertension, and this may disappear wholly in time.

Thus a stout lady of sixty some twenty years ago carried a systolic pressure varying from 170 to 180, and this continued for many years till she was lost sight of. Within a year she has weathered successfully a severe double pneumonia and now at eighty is about to take up enthusiastically a residence in a distant part of the country.

Another woman of 69, with one kidney, developed a hypertension of 240 and 120, a much dilated heart, and dyspnea on exertion. The heart-apex was about an inch outside the nipple line. There were no urinary abnormalities. With moderate diet and rest she has today, after three years, a blood pressure of 170 and 100, the apex is within the mammalary line, and there are no cardiac symptoms. At 72 she is unusually vigorous and during the past two years she has survived removal of cancer of the breast and pneumonia.

Many robust men in the late forties or fifties develop a moderate hypertension which disappears after lessening their work and diet, and after judicious exercise in walking or golf.

We are just beginning to know something about the clinical significance of blood pressure and, in another twenty years, will very probably know considerably more. —K.W.

PACIFIC NORTHWEST MEDICAL ASSOCIATION

Hotel Accommodiations:

Reservations have been coming in more rapidly than expected. About two-thirds of the rooms at the Davenport Hotel are taken. Those who have not registered and made reservations should do so at once, for while Spokane has ample hotel accommodations, those who make reservations early will get the more desirable rooms. Registration should be made through Dr. F. G. Sprowl, 420 Paulsen Building, Spokane, Washington.

Railroad Rates:

All American Railroads except those from Utah are giving a rate of a fare and a half to the meeting. In order to secure this rate, a receipt must be obtained when ticket is bought to Spokane. The railroads in Utah are giving a summer tourist rate that is cheaper than a fare and a half, so that physicians in Utah should buy the tourist tickets. The Canadian lines do not give rates during the summer months. Physicians in Canada should buy a ticket to the nearest American railroad, and from there get a ticket to Spokane with a receipt.

Additions to the Program:

Dr. A. F. Tyler, Professor of Roentgenology, Creighton University Medical School, will present a paper upon "Deep Roentgen Therapy." This paper will be discussed by Dr. J. Howard Snively of Seattle, and Dr. Frederick E. Diemer of Portland.

Dr. E. C. Rosenow, of the Mayo Foundation, will present a paper, presumably upon his researches on encephalitis. Dr. Robert H. Millwee, of Dallas, Texas, will speak on "High Voltage Roentgen Treatment of Carcinoma of the Lungs." He is a pioneer and high authority in this work. Important lectures for the public at Spokane will be given by Dr. Joseph C. Bloodgood on "Cancer Prophylaxis," and by Dr. F. E. Sampson on "Conserving Our Community Capital," Wednesday evening, July 5. And on the same, or the next evening, Dr. Walter B. Cannon will talk upon "What Has Been Accomplished by Animal Experimentation." Come the evening before the regular meeting, therefore. On Saturday night will be the dinner at the

Davenport Hotel. Instead of after-dinner speeches Dr. Frank Billings will discuss "Present Day Problems of Medical Practice." Dr. M. T. MacEachern, of Ottawa, will open the discussion.

THE WASHINGTON STATE SOCIETY

according to President W. D. Read of Tacoma, will meet in Tacoma, September 6th and 7th, Wednesday and Thursday, just preceding the meeting of the Washington Section of the American College of Surgeons.

Three members of the faculty of the Leland Stanford University will give us papers—

Doctor Addis on some of the problems of Bright's Disease, Doctor John F. Cown, Studies in Cases of Chronic Appendices, and Doctor Ernest C. Dickson, upon Botulism.

Doctor J. Walker, late of the Royal Victoria Surgical Staff, will give us a paper on Renal Infections, Doctor R. F. Hain on Extra-Renal and Ureteral Pathology Causing Renal Symptoms, Doctor J. W. Snokes of Tacoma, on Eugenics. Doctor M. F. Dwyer, on X-ray Studies of Duodenal Ulcers, and Doctor Ralph H. Kuhne on the subject of Chorea and Childhood.

Some time will be given to Hospital Standardization Committe and the Public Health League. The scientific program is not yet complete, but several more interesting papers will be added.

The social part of the meeting will be in the hands of the Pierce County Medical Society.

GRADUATE MEDICAL LECTURES

The absence of a medical school in the state of Washington has been commented on by various educational authorities and always with approval. The number of students from this state to take an undergraduate medical course has not been sufficient to justify the great expense of maintaining such a medical school as the state and present day conditions demand. At the same time there are disadvantages connected with the lack of medical teaching in the state.

One of the needs most felt was that of graduate teaching for the practitioners of the state and to meet that need in some respects President Suzzallo of the University of Washington in 1916 authorized Mr. Start, the director of the University Extension Service, to institute, with the active cooperation of the medical profession, the Graduate Medical Lectureship, which provides an intensive group of courses for one week each summer.

The lectureship is now in its sixth year and the program this year is of unusual merit. No physician who wishes to keep abreast of the times can afford to miss these lectures on living topics by masters in the profession. There are six men on the program, any one of whom would draw a large audience of men anywhere in the English speaking world and the state of Washington may feel very fortunate in offering this great opportunity to the medical men of the state and the Pacific Northwest.

THE ST. LOUIS A.M.A. MEETING

Altho the registration at the St. Louis meeting did not equal that in some Eastern cities of past years, it will rank as one of the large meetings of the Association. A visitation approximating five thousand persons, with accompaning friends and relatives, makes a decided impression on hotel accommodations of a city even of the size of St. Louis. Owing to the latter's geographical situation there were large delegations from the South. A creditable representation was in attendance from the Pacific Northwest. The climatic conditions were ideal, presenting moderate warmth tempered by a cool breeze. The distinctive feature of the association button was the likeness of Beaumont, a St. Louis resident of a century ago, when he recorded the classical observations on gastric physiology by means of a gunshot wound fistula on the person of Alex St. Martin.

A noticable feature of the program was the absence of papers by the well known leaders of the profession which are always anticipated on these occasions. This was due to the existing rule that no member can appear on the program oftener than once in three years. Consequently the younger generation of medical leaders was featured and the opportunity given to hear some of those who will direct medical thought in future years. The general character of papers presented seemed to compare favorably with established standards. The papers covered a wide range of subjects. The branch of medicine receiving most attention was endocrinology. One session of the medical section was devoted entirely to papers dealing with various phases of this subject. In addition a society for study of endocrinology had a day's session preceding the A.M.A. meeting and Prof. Engelbach, of Washington University, held a special clinic of cases illustrating various endocrinologic abnormalities. It seems as if interesting future developments along these lines might be anticipated.

During the three days of the meeting a continuous course was in progress of moving pictures of surgical and other procedures and illustrated lectures, presented by distinguished members of the profession. The hall for these was adjacent to the exhibits, so that they drew large audiences. The exhibits covered the usual wide range of medical and surgical subjects. The constant attendance demonstrated the attraction they presented to all visitors.

A matter of interest to the profession of the Northwest is the agitation inaugurated in the House of Delegates for bringing the 1925 meeting to Seattle. A meeting on the Pacific coast should be due by that time and Seattle will be the logical location for it. The electrical exposition scheduled for Portland that summer will be an attraction for tourists and the two will naturally supplement one another in bringing the physicians of the country to the Northwest. This will be a profitable subject for future consideration. —SMITH.

RIVERTON SANATORIUM

Elsewhere in this number will be found the announcement of the Riverton Sanatorium for the treatment of cases of tuberculosis.

The Standardization Committee of the Washington State Medical Association has approved the plan for reorganization and the Hospital will meet the requirements for such an institution, namely, the organization of the staff, with monthly meetings for the discussion of clinical cases and the review of case records; a complete x-ray and pathological laboratory; a complete set of case records.

As stated in the announcement, the open staff hospital for the treatment of tuberculosis is a new type of organization for the Northwest. Tuberculosis differs from many other diseases in that the general treatment must conform to certain fairly definite methods. It is the plan of the staff to develop a routine treatment, subject to changes in particular cases, which will yield the best results under the prevalent climatic conditions.

Seattle has the Firland Sanatorium for the treatment of charity cases, an institution second to none in the United States, and the Laurel Beach Sanatorium, a privately owned and operated institution of exceptionally high character. The Riverton Sanatorium will not interfere in any way with these institutions, but will complete the list, offering to other members of the profession an opportunity to obtain sanatorium treatment for such cases as they desire. This will give Seattle and vicinity three standardized hospitals for tubercular cases. The medical profession of Seattle may well be proud of three such institutions.

MEDICAL NOTES

OREGON

Sir Thomas Lewis. The third Annual Jones Lecture under the auspices of the University of Oregon Medical School was given May 15-19, by Sir Thomas Lewis, of London.

The first two lectures dealt with auricular flutter and auricular fibrillation. The cause of these two cardiac irregularities can now be satisfactorily explained only on the basis of circus movement, according to Sir Thomas.

The remaining three lectures dealt with the effect of Quinidin, Atropin and Digitalis upon the irregular heart. Quinidin is given in the form of the sulphate, bisulphate or bihydrochloride, the latter being more easily obtainable in pure form.

The average dose of Quinidin is 0.4 gms. three times daily and once or twice at night for a week. This may be increased to 0.6 gms. if necessary Success in effecting a more or less permanent return to normal rhythm in auricular fibrillation was obtained in only about 25 per cent of the forty cases treated by Dr. Lewis. In another 25 per cent of the cases fibrillation ceased but returned after a time. This information may prove timely to those who might have regarded Quinidin as a sure cure for Auricular fibrillation. Venous congestion is a positive contraindication to the use of Quinidin. The action of Quinidin, Atropin and Digitalis on cardiac rhythm is confirmatory of the hypothesis of circus movement being responsible for flutter and fibrillation.

These lectures were of far greater scientific interest than of practical value to the general practitioner, but, being given by such a master

of English and by one of such scientific preeminence as Sir Thomas, they intensely interested the large number of physicians in attendance.
—von Puhl.

Portland Ophthalmological and Oto-Laryngological Society has had its name changed to that of the **Oregon Academy of Ophthalmology and Oto-Laryngology,** and the officers for the ensuing years are: President, Dr. C. Gertrude French, The Dalles, Ore.; Secretary-Treasurer, Dr. Andrew J. Browning, Portland, Ore.

WASHINGTON

Dr. W. A. Shannon, Seattle physician, has been elected president of the state board of regents of the University of Washington. He succeeds John Ray, of Tacoma, whose term expired some time ago.

Dr. D. C. Hall, University of Washington, has been appointed commander of the 31st Medical Regiment of the 96th Division of Reserves. He is now making appointments of officers in his regiment and is recruiting new men.

The Pacific Northwest Urological Association, comprising surgeon specialists, was organized at a meeting of surgeons held recently at the University Club, Seattle.

Dr. A. E. MacKay of Portland was elected president; Dr. E. W. Bowak of Victoria vice-president, and W. W. Pennock of Spokane, secretary-treasurer.

The meeting was attended by surgeons from Victoria, Vancouver, B.C., Portland, Spokane and other Northwest cities.

Eagleson Hall. The new home of the campus Y.M.C.A. to be erected at Forty-Second and Fifteenth Northeast, will be known as Eagleson Hall. It is named for James B. Eagleson, son of Dr. and Mrs. James B. Eagleson, who as a lieutenant in the army gave his life in the world war. Work is to begin on the structure June 19, coincident with the commencement exercises at the University.

Young Eagleson was a prominent student at the University of Washington and an active Y.M.C.A. worker. He also aided in the Boy Scout work in this city to a very great extent.

Dr. Casper W. Sharples' election to the three-year term of the Seattle School Board should be highly appreciated because it is the city's honor to have the services of such an able physician. It is only too seldom that a citizen so distinguished is willing to sacrifice himself for the general good.

The Pierce County Anti-Tuberculosis Society recently elected officers as follows: Dr. E. A. Layton, president; Dr. Joseph F. Griggs, vice-president; Mrs. John Goldsbury, secretary, and R. D. McDonald, treasurer.

IDAHO

Licenses to practice medicine and pharmacy in the State of Idaho have been granted to twelve doctors. Following are the licensed doctors:

John A. Tyrell of Twin Falls, William P. H. Habel of Tulalip, Wash., E. W. Shircliff of Spirit Lake, Andrew Otteraaen of Kendrick, B. H. Rouse of Twin Falls, A. S. Needles of Montpelier, W. L. Sutherland of Roosevelt, Utah, Thomas A. Ellison of Afton, Wyo., Ralph G. Nelson of Troy, D. Everette Standard of Nampa, John W. Visher of Twin Falls, and Andrew S. MacDougall of Lewistown, Mont.

OBITUARY

Dr. George Newlands, one of the oldest physicians in Seattle, died April 30 at Providence Hospital after a brief illness.

....Dr. Newlands, who was born in Kingston, Ontario, May 26, 1851, came to Seattle in 1889, just before the fire, and had been actively engaged in the practice of medicine and surgery since that time. He took an active interest in civic affairs and was formerly a member of the board of health.

He was a past exalted ruler of Seattle Lodge No. 92, B.P.O.E., and a Mason and a Forester.

He is survived by his widow, Mrs. Sarah Elizabeth Newlands; a son, Charles Newlands, of Seattle, and a daughter, Mrs. R. R. Pullen, Lead, S. D.

REPORTS OF SOCIETY MEETINGS

The general meeting of King County Medical Society was held May 1, 1922, in the Masonic Club Rooms at 8 o'clock.

The meeting was called to order by the President, Dr. Copeland Plummer.

The minutes of the previous meeting were read and approved.

Applications of Dr. Robert E. Stobie and Dr. Raymond L. Zech were read, voted upon and both candidates were elected unanimously.

The first paper of the evening was read by Dr. Noble Wiley Jones of Portland on, "Ileocecal Incompetence. A Clinical Analysis of 1000 Cases With Some Deductions Therefrom."

Discussion was opened by Dr. C. S. Leede, continued by Dr. J. M. Blackford and closed by Dr. Jones.

The second paper was presented by Dr. H. J. Whitacre of Tacoma on, "Extrophy of the Bladder."

Discussion was opened by Dr. A. H. Peacock, continued by Dr. J. Walker who presented some lantern slides. Dr. Whitacre closed the discussion.

The President announced that the funeral of

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The treatment of pulmonary and laryngeal tuberculosis is a distinct specialty. As a rule, the general practitioner is not situated nor prepared to handle such cases successfully. A Sanatorium offers the tuberculous patient the best chance for recovery but the Sanatorium, even with climatic advantages, accomplishes nothing in itself. The treatment is the important thing. Those who control the treatment are the soul of the institution. For many years we have been doing this special work and have, we think, achieved more than average results. We individualize the treatment and all modern methods are employed. We advertise to the profession only. When patients are discharged we refer them back to the physicians who sent them.

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Dr. George Newlands would be held May third, and requested as many of the physicians to be present as possible. Dr. Newlands had been a member of the Society for thirty-three years. There were 85 present.

Professor Fuchs of Vienna has accepted the invitation of a group of ophthalmalogists in San Francisco to give a private course of lectures to ophthalmalogists during his visit on the Coast as the guest of the California Academy of Medicine.

The course will commence July 10, at 5 p.m. in the County Medical Building, San Francisco. It will consist of thirty hours and will extend over two or three weeks according to the decision of the members. This question will be decided at the first meeting.

Invitation is extended to ophthalmalogists of the Pacific Coast so that they may avail themselves of the opportunity.

Any wishing to take this course should write to Dr. Otto Barkan, 516 Sutter Street, San Francisco, for full particulars.

BOOK REVIEWS

Edited by Kenelm Winslow, M.D.

Practical Infant Feeding. By Lewis Webb Hill, M.D., Junior Assistant Physician to the Children's Hospital, Boston; Assistant in Pediatrics, Harvard Medical School. Octavo of 483 pages, illustrated. Philadelphia and London. W. B. Saunders Company. 1922. Cloth, $5.00 Net.

Lewis Webb Hill's writings have one merit in common, there is always splendid organization and integration of material, and presentation from a practical, clinical point of view. In his new book on infant feeding, Dr. Hill has succeeded in embodying the essence of recent contributions in metabolism, nutrition and feeding in infants, without creating confusion, or making his work less practical because it is scentific.

Included in the book is the author's recent article on the Development of Modern Artificial Feeding, a discussion that does much to orient the reader in this field. The presentation of methods of milk modification and special preparations used in infant feeding is most adequate. The author constantly stresses the necessity of having accurate knowledge of the constituents of formulae, and of meeting definite indications, rather than permitting feeding to be empirical. While he claims to hold no brief for any particular "school" of infant feeding, he nevertheless definitely gives his own preferences and impressions, thus crystallizing the discussion into usable form.

In the discussion of nutritional disturbance in artificially fed infants, an etiologic classification, following Czerny, is adhered to, digestive disturbances being related to the food element most active in the production of the difficulty. Special chapters are included on contipation in infancy, and on habitual loss of appetite in children. The latter will be especially welcomed by readers. The chapter on treatment of infantile eczema is particularly valuable, inasmuch as it definitely outlines a plan of attack of a case from the standpoint of local treatment, while at the same time, dietary considerations are not slighted. The closing chapter on pyloric stenosis and spasm is similarly well balanced, both surgical and medical aspects being adequately presented.

—Mohr.

Management of the Sick Infant. By Langley Porter, B.S., M.D., M.R.C.S. (Eng.), L.R.C.P. London) Professor of Clinical Pediatrics, University of California Medical School; and William E. Carter, Assistant in Pediatrics and Chief of Out Patient Department, University of California Medical School. 654 pages, illustrated. St. Louis C. V. Mosby Company. 1922. Cloth, $7.50 Net.

This volume is a practical, clear, and complete exposition of the special features of diagnosis and treatment of symptoms and disease in infants. The first part devotes separate chapters to each of the symptoms most commonly met in pediatric practice, as vomiting, diarrhea, constipation, pain, convulsions, etc., and one chapter to nutrition and nutritional disturbances. Diagnosis and details of treatment are given great attention.

A second division of the book discusses diseases of infancy related to the various bodily systems, and the third and last part is devoted to an illustrated outlined exposition of methods of procedure in dealing with sick children. All procedures are mapped out in outline form, most explicit instructions are given, and abundant illustrations contribute to clarity. Throughout, the volume is the simply elucidated practical experience of highly practical men of large experience, and most gratifyingly accomplishes the purpose intended, i.e., to give the reader explicit information as to the management of sick infants. The arrangement is such as to make the contained material readily available. Mohr.

A Manual of Clinical Laboratory Methods. By Clyde L. Cummer, Ph.B., M.D., associate professor, Clinical Pathology, School of Medicine. Western Reserve University. Cloth. 484 pp. Lee & Febiger, Philadelphia.

This manual gives various laboratory methods in concise and accessible form.

The plan adopted is as follows:

(1) Outline of routine examinations; (2) description of the simpler qualitative methods; (3) description of quantitative methods, or those of complicated technique; (4) discussion of findings in various morbid conditions.

The book shows the handiwork of one experienced both in technique and teaching.

Its terseness and clear style recommend it highly.

The illustrations are unusually good and serviceable. —West.

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The Journal of the State Medical Associations of Oregon, Washington, Idaho and Utah

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ORIGINAL CONTRIBUTIONS

DIAGNOSTIC PROBLEMS IN PULMONARY TUBERCULOSIS*

Ralph C. Matson, M.D.

PORTLAND, ORE.

It is apparent that something is wrong when the work of keen clinicians leads to such faulty results as occurred in the Army, and we need not be surprised that tuberculosis is diagnosed when it does not exist, and goes unrecognized when it does exist. The error is probably due to the clinician assuming that the signs found in a supposedly early case, at the time of his examination, are necessarily signs of a tuberculous process just developing in hitherto healthy lung tissue, and that the first signs of the disease appear in the apex.

In this connection we must accept the teachings of von Berhring, and Paul Romer; Colonel Bushnell and others that chronic pulmonary tuberculosis in nearly all cases is only the final stage of a childhood infection, and the immunity caused by it is the condition which makes the chronic form possible. Chronic pulmonary tuberculosis mostly begins in the tracheo-bronchial glands and extends along the bronchial branches into the lung, especially towards the apex where the lung has the least motion. And, according to the mobility of the lung and the immunity of the subject, we have the less clear manifestation of tissue changes in the formation of diffuse fibrous tissue, or, through fresh outbreaks, it proceeds to the development of a superficial focus. At times the process never advances beyond the formation of a fibrous cap at the apex (caput pleurae), a finding in one person out of three coming to autopsy over thirty years of age. In other cases after stationary periods, manifest foci develop in tissue already changed by the first attack. The different modifications of vesicular breathing proceed according to the age and extent of the disease. Thus the physical signs are modified depending upon the degree in which the apex deviates from the normal, and by the thickness of the chest musculature and the symmetry of the chest. Therefore, the physical signs are found to vary from time to time in the same case even in its incipiency and not any one sign, or any one sequence, are pathognomonic of strictly early, apical tuberculosis. Furthermore, while it is generally conceded that pulmonary tuberculosis begins in the hilus and extends to the apex, there are some who hold that it begins peripherally, in which case the physical signs would be quite different, the latter giving physical signs which clinicians holding the disease begins at the hilus would consider not strictly early tuberculosis.

I have no desire to further befog the issue by interjecting my personal opinion in an effort to

(* Continued from June Number)

clarify the situation. So I am forced to leave you still confused with my disposition of early physical signs and impress upon you that most of the so-called early changes in breathing and slight percussion changes are met with at times under physiological conditions as normal disparities.

The case under consideration may be one where there has been an abortive tuberculosis years previous with no recrudescence, or a recrudescence may have occurred and manifest tubercle formed and the clinician incorrectly assumes all the physical signs he finds are due to the fresh process which has just come to his attention. Laennec was right. Discrete tubercles in healthly lung tissue cannot be detected with certainty until rales develop. The Laennec view is supported by the post-mortem evidence that early miliary tubercles cannot be detected by physical signs, because the autopsy lesion is always greater than that determined during life by either physical diagnostic or roentgenologic methods.

Furthermore, autopsy shows that recent fresh extensions from old foci, manifested by the presence of discrete tubercles, often escape detection by these same methods.

Undoubtedly active tuberculosis is often diagnosed where no clinical tuberculosis exists, and old spontaneously healed foci are mistaken for incipient lesions, and patients are subjected to unnecessary treatment which at times can be ill afforded. Thus, statistics regarding the curability of tuberculosis are vitiated and, what is of greater moment, the real cause of the patient's complaints overlooked.

It follows that the diagnosis of incipient tuberculosis is one of the most difficult in the realms of medicine and requires group study. At least the diagnosis should not be made by any one clinician and it always demands a critical consideration of a carefully written clinical history and a weighing of the evidence and data obtained from the complete physical examination. Roentgenological study of the stereoscopic plates, laboratory examinations, including sputum, urine, etc., blood examination and Wassermann reaction, together with biological tests. If the case has not been studied in the above manner, one should reproach oneself, if the diagnosis proves to be incorrect. The diagnosis is to be made rather by exclusion than accusation.

Incipient tuberculosis is frequently diagnosed on a basis of slight changes found on physical or roentgenological examinations in a large group of patients presenting themselves with a familiar complex of fatigue, loss of weight and strength, anorexia, tachycardia, slight elevation of afternoon temperature and vasomotor instability. The sputum proves negative.

The tuberculosis specialist may find a small lesion of no clinical importance but diagnoses an active tuberculosis and the patient is subjected to a rest, hygienic, dietetic regime and even change of climate with no benefit. The symptom complex is entirely out of proportion to the character and extent of the lung abnormality thought to be found. The general examination is too often omitted. Many of these cases are due to hyperthyroidism. The metabolic test often furnishes evidence by which hyperthyroidism can be excluded.

Another group commonly mistaken for incipient tuberculosis complain of much the same symptom complex as above, except the vasomotor instability and nervousness are replaced with chest pain and possible cough suggesting some obscure tuberculous process. Painstaking examination will often reveal focal infections of the teeth, ethmoids, nasal sinuses, tonsils and even intestines or genito-urinary tract. The removal of the focal infection results in a brilliant cure of the "tuberculosis."

There come also under consideration, from a differential diagnostic standpoint, innumerable pathologic processes such as residual infections of the streptococcic, pneumococcic and influenza type.

Liebermeister[31] and others have not only called attention to the frequency of an apical bronchitis and bronchopneumonia due to the bacillus influenza but have reminded us that they are often mistaken for tuberculosis.

Furthermore, we have also to consider typhoid fever, para-typhoid and not uncommonly chlorosis, neurasthenia, carcinoma, sarcoma and latent lues, any of which may give the symptom complex of pulmonary tuberculosis.

Confusing also the are cases in which men in robust life have a sudden large hemorrhage from the lungs and the physical examination and roentgenological examination reveal nothing. These cases represent a type of abortive tuberculosis. The bleeding is due to softening of a very small tubercle situated between a bronchus and a bloodvessel. We should search carefuly for areas of atelectasis due to plugging of the bronchi from aspirated blood too small to be shown on the x-ray plate, yet the stethoscope may reveal fine atelectatic crepitations over a circumscribed area due to an absorption atelectasis. Proven, that the blood comes from the lungs, a diagnosis of pulmonary tuberculosis is justifiable. Of course, this does not include hemoptysis of small quantities of blood or spitting of blood-streaked sputum, which may be due to passive lung hyperemia in cardio-renal disease, or to malignancy, or to hemorrhagic infarct, or to acute respiratory infections of the streptococcus type, or to chronic lung suppuration, such as bronchiectasis.

On account of the frequent occurrence of tuberculosis and syphilitic lesions of the larynx and their confusion, it may be well to refer to syphilis of the trachea and bronchi, even though they are rather uncommon. Symmers[32] in 4880 autopsies found anatomical evidence of syphilis in 314 cases. However, in only four, or one per cent, were there lesions of the trachea and he reported no lesion of the bronchi. Connor[33] states that syphilitic lesions of the trachea and bronchi are commonest in the fourth decade. The lesions, however, are not likely to come into differential diagnostic concern; unless one is confronted with tracheal or bronchial obstruction. Stimson[34] states, that without signs of obstruction, the diagnosis is made by bronchoscopic examination and Wassermann; with obstruction, the characteristic picture consists of dyspneic breathing in which the prolonged, labored, and relatively slow inspiration and easy expiration, follow each other with the usual pause. There are also present an inspiratory stridor, a characteristic brassy cough and inspiratory sinking-in of the supra-sternal and supraclavicular spaces; also the epigastrium and intercostal spaces.

The second big group of cases wherein mistakes are made, are those with marked physical and roentgenological findings, and with considerable sputum. These are diagnosed tuberculosis when it does not exist, and go unrecognized when it does. The mistake is one of misinterpretation of physical or roentgenological findings, and is perhaps more common but less excusable because resort to laboratory procedures will, if properly carried out, decide with certainty whether the case is tuberculous or not and, if non-tuberculous, a diagnosis as a rule can be made by a careful study and observation and the application of laboratory methods at our disposal.

One would expect the diagnosis of advanced pulmonary tuberculosis to be easy, yet McCrae and Funk[35] in checking the correctness of their diagnosis in cases admitted to their wards in Jefferson Hospital from the General Medical Clinic and from the Tuberculosis Dispensary, as well as from members of the profession, found in 1200 consecutive admissions with a diagnosis of advanced pulmonary tuberculosis that seventy-two, or six per cent, were non-tuberculous. One hundred and thirty-four cases came to autopsy revealing seven, or 5.2 per cent, non-tuberculous, a figure corresponding very nearly to the preceding one, confirming the correctness of their own diagnoses. Cardio-renal disease was the most common disease mistaken for pulmonary tuberculosis. Careless and incomplete examinations and misinterpretations of physical findings were the reasons for error. The other mistakes, in the order of their frequency, comprised pneumonic sequelæ, bronchiectasis, abscess of the lung, chronic bronchitis, neoplasma, syphilis, aneurysm, antharcosis, bronchial asthma, empyema, diabetes mellitus, cancer of the rectum, foreign body in the lung and malingering.

Ash[35] found in 198 cases coming to autopsy at the Boston Consumptive Hospital, having been admitted with a diagnosis of tuberculosis, twenty-three, or 11.6 per cent, non-tuberculous. These cases had been correctly diagnosed before death. Cardio-renal disease was most frequently mistaken for advanced tuberculosis.

Cases with more or less extensive lung changes involving the upper lobes particularly, with sudden onset are for a time confusing. Particularly interstitial pneumonitis of streptococcic origin, which is so common since the recent influenza epidemic. We have here to deal with a peribronchial and interstitial inflammation, with more or less alveolar involvement sometimes confined to the upper lobes, giving all the physical and roentgenological findings of a chronic fibro-caseous tuberculosis, even evidence of excavation of lung tissue.[7]

The following points will serve to differentiate the two processes:

Streptococcus pneumonitis. Onset dates from recent acute respiratory infection. Rather sudden. Fever not constant. Pulse slow. Patient feels acutely ill. White blood count increased. Average 14,000.

Fibro-caseous tuberculosis. Onset follows loss of weight and strength. Cough for some time past. Fever moderate. Pulse rapid. Patient feels fairly well. Not acutely ill. White blood count not increased.

The physical findings may be the same in these two diseases, except in streptococcic pneumonitis there is no narrowing of the apical isthmus, whereas in tuberculosis there is narrowing.

Rales are crepitant and subcrepitant chiefly.

Sputum repeatedly negative for tubercle bacilli even after enrichment procedures. Sputum reveals streptococcus, influenza bacillus or pneumococcus. Convalescence rapid, lung clears up quickly. At the end of a month or so, we have a well man.

Crepitant and sub-crepitant rales are never found in tuberculosis except in acute forms.

Sputum often positive and always so if softening has taken place. Convalescence slow. Lung clears up slowly. Rales may even extend, while patient improves as result of rest in bed. At the end of a month, there is still little change in physical findings.

Caseous pneumonia and tuberculous bronchopneumonia, I need only mention in passing, as these forms develop usually from a pre-existing tuberculous focus which can be demonstrated as a rule, and tubercle bacilli appear in the sputum when softening occurs, if not already present.

Cases with physical and roentgenological findings suggesting tuberculosis where the clinical picture is more chronic than the preceding and where sputum examinations are repeatedly negative, demand exclusion of various other infecting agents which produce lesions similar to the tubercle bacillus. I have already mentioned the streptococcus, pneumococcus and influenza bacillus. Important also are certain members of the streptothrix group and less common aspergillus, spirochetosis, lung fluke and ova.

The streptothrix infections are much more common than supposed and are constantly mistaken for tuberculosis. The streptothrix, moreover, is the only one of the group referred to above which resembles the tubercle bacillus morphologically. Occurring as acid-fast rods, they are arranged in chains and decolorize with thirty per cent nitric acid, although they frequently resist twenty per cent sulphuric acid and Gabbots stain.

Bronchial spirochetosis first described by Castellani[37] in 1906 has been considered as a disease of tropical countries. However, it is being reported in temperate zones of Europe and the United States among native born who never visited the tropics. Bronchial spirochetosis in many cases clinically resembles tuberculosis. Its onset may be sudden with fever, cough, and expectoration containing blood, with physical findings of an acute bronchitis. Later, the sputum may be pink, jelly-like, hemorrhagic, purulent and foul smelling. Areas of lung infiltration or consolidation may occur. Clinically, many of the cases reported have at first been confused with pulmonary tuberculosis. Therefore, the sputum of every case of hemoptysis not revealing tubercle bacilli should be diligently searched for spirochetes. Furthermore, the findings of spirochetes, with or without fusiform bacilli in lung suppuration, should be looked upon as of much diagnostic import, unless their presence can be traced to a gingivitis, stomatitis or angina. Undoubtedly, bronchial spirochetosis exists much more extensively than supposed, because the organism stains lightly and is commonly overlooked in routine sputum staining procedures, but it may be easily demonstrated by the Fontana method. Recently Tunnicliff[38] has devised a simpler staining procedure comprising a modified Gram and omitting the alcohol decolorization. The sputum should be fresh and collected after thorough cleansing of the mouth and throat.

Whether the disease is entirely due to an organism Castellani termed Spirochaudinnia bronchialis, a species of Spironema inhabiting only the deeper bronchi, or may also be due to the aspiration of spirochetes and fusiform bacilli (Spirochæta Vincenti and Bacillus fusiformis) from gingival buccal or pharyngeal lesions, is still a matter of controversy. However, the latter have been found recently in pulmonary gangrene caused by the aspiration of infective material from unclean mouths. The recognition of these bronchial infections and broncho-pulmonary spirochete infections are important because they are transmissible, although the degree of transmission is slight. Furthermore, individuals may harbor the organism with little or no symptoms in common with tuberculosis and respond readily to neo-arsphenamin; whereas, if mistaken for pulmonary tuberculosis, the patient is likely to be put through a prolonged and expensive sanatorium routine with little or no benefit.

Aspergillosis infections of the lungs are not as rare as commonly believed and are also of great importance, not only on account of their relationship to tuberculosis as a complication, but also on account of their being mistaken for tuberculosis. The disease responds well to the iodides, especially intravenous injections of sodium iodide. Therefore, in confusing cases, the sputum should be searched for aspergillus fumigatus.

The value of careful sputum examination is not appreciated, especially the microscopic examination of the twenty-four hour specimen in the sedimentation glass, so valued by the older clinicians but neglected today. Too often directions are given that a specimen be sent to the board of health or some private laboratory for examination where the usual routine staining for tubercle bacilli is made. Physicians are too often content to rule out tuberculosis on the basis of one or two negative reports. It must be borne in mind that tubercle bacilli will not be found until softening takes place. Moreover, even when present, tubercle bacilli are not demonstrable in the ordinary smear, unless present in quantities of 5000 per cubic centimeter of sputum, and, even after concentration procedures they will be demonstrable by accident if present in quantities less than 500 per cubic centimeter. The entire twenty-four hour specimen should be examined, or, if the sputum is scanty, then the forty-eight or seventy-two hour specimen should be examined, not only by direct methods, but by concentration procedures such as the antiformin or the Ellerman & Erlandson method. If the sputum is negative, and the case is clinically tuberculous, it should be examined repeatedly with negative results before an open chronic fibro-caseous tuberculosis is excluded. Careful search must then be made for the less common infecting agents. If you are not familiar with the bacteriological characteristics of the rare forms of infection, the specimen should be sent to a competent bacteriologist.

In addition to the bacteriological examination of the sputum, study of the twenty-four hour specimen in the sedimentation glass, noting its character, odor and the character of its cellular and other constituents should be made with the naked eye and under low power lens. This is of tremendous value in the diagnosis of chronic lung suppuration with extensive physical findings suggesting tuberculosis. Because of this neglect to properly examine sputum, many cases of bronchiectasis, chronic lung abscess (especially those unusual forms sometimes situated in the upper lobes), pneumonoconiosis, chronic bronchitis with emphysema, lung gangrene, lung cirrhosis, metastatic carcinoma and sarcoma, are diagnosed as tuberculosis. Even the x-ray will often fail to clear up the diagnosis in the above cases.

This brings me to a consideration of the fibroid types of tuberculosis, a form characterized by marked proliferative changes with little tendency to caseation. These forms are commonly complicated with, and masquerade as, chronic bronchitis with emphysema, with or without bronchiectasis, especially in the aged. Often in these cases there are enormous quantities of sputum which is negative to the acid types of tubercle bacilli, but no case of this character can be considered non-tuberculous until a careful search has been made and the non-acid fast types of Much are found absent.

Occasionally one sees a true tuberculous bronchitis, also isolated tuberculous ulcer in the bronchus. This latter is due to the rupture of a caseous tracheo-bronchial gland into the bronchus. Both these forms, especially the latter, are practically negative to physical and roentgenological examination, the patient complains of little, there is no constitutional disturbance, yet the small pledget of sputum brought up daily reveals tubercle baccili. Bronchoscopic examination may reveal the ulcer.

There are still to be considered lues and foreign body. Not only is latent lues without demonstrable pulmonary changes mistaken for tuberculosis because of a clinical history suggesting tuberculosis, but lung syphilis, while not frequent, must be thought of because it is commonly mistaken for tuberculosis. Virchow, over sixty years ago, said "Some patients die of so-called tuberculosis for lack of anti-syphilitic treatment." Clinicians still maintain it is rare while pathologists claim it is comparatively common. Lung syphilis is confusing. The history and physical signs may not differ from pulmonary tuberculosis and while a roentgenogram of a syphilitic lung differs from that of a tuberculous lung, it does not differ from many other pulmonopathies. Gumma may be mistaken for malignant processes. The absence of tubercle bacilli in the sputum, after repeated examinations, and the great disparity between physical signs and constitutional disturbances with a positive Wassermann reaction, are important hints that the case may be pulmonary syphilis. At the same time, pulmonary syphilis and pulmonary tuberculosis may co-exist. It is important that lung syphilis either in co-existence with tuberculosis or alone, be recognized, as pulmonary syphilis responds splendidly to intensive anti-syphilitic treatment.

Every chronic chest condition should have a careful roentgenological study whether thought tuberculous or not, no matter what the sputum findings may be.

Chevalier Jackson[39] has pointed out the frequency with which foreign bodies are unknowingly aspirated in the bronchi. Unless the lumen is occluded, the body may remain for months or years, causing no symptoms. Pathological changes develop, however, progressively and sometimes suddenly, if the bronchus becomes plugged. Many of these cases on account of no history of foreign body (aspiration during anesthesia or sleep), or its supposed non-entrance because of absence of symptoms immediately following supposed aspiration, are treated for tuberculosis on account of a history of hemorrhage, cough, expectoration, etc. In fact, prolonged sojourn of a foreign body in the bronchus may give the clinical picture of advanced pulmonary tuberculosis.

A case of this character came under our observation ten years ago. The patient, a woman, developed chills, fever, cough and expectoration of purulent sputum following extraction of a tooth under anasthesia. A diagnosis of anasthetic pneumonia with lung abscess was made by the attending physician. The patient continued to cough and expectorate purulent sputum, with occasional hemoptysis, ran a low grade temperature, developed night sweats and progressively emaciated. While no tubercle bacilli were found in her sputum the patient was diagnosed tuberculous and sent to Colorado. After having been treated for seven months, she suddenly coughed up a large quantity of sputum containing a portion of a tooth. Roentgenological study had never been made. She came under our observation several months later with a chronic lung abscess which was successfully closed by means of an artificial pneumothorax.

Roentgenological examination will reveal at least an opaque foreign body, and occasionally show non-opaque foreign bodies, which may sometimes be located by means of physical examination.

Many mistakes in the diagnosis of pulmonary tuberculosis are based upon misinterpretation of x-ray findings. The roentgenological examination with fluoroscope and plate are of inestimable value and no examination is complete without roentgenological control. However, the roentgenologist must have not only a comprehensive knowledge of roentgenology of the lungs but he must also be stabilized by a knowledge of the pneumopathies from a clinical and pathological standpoint. Do not content yourself with a roentgenological report, for no matter how detailed and minute the description, it will never convey to your mind's eye the picture the fluoroscope or plate reveals. You will protect yourself and profit greatly by going over your plates with the roentgenologist but you must first familiarize yourself with the normal chest's appearance and its physiological variations.

Tuberculosis begins invariably in the hilus and usually extends along the apical bronchi, especially the posterior branch, to the apex. Apical tuberculosis without hilus disease on the same side is never seen. Roentgenologists have described changes in the apical branches which they believe pathognomonic of tuberculosis. However, many pneumonopathies will produce changes in these bronchi, indistinguishable from tuberculosis. Stereoscopic plates should always be studied as no accurate visualization can be gotten from flat plates. The x-ray frequently reveals more disease than there are surface signs. However, in the post-pleuritic-cortical-fibro-caseous tuberculosis, just the reverse is true. This type follows pleurisy with effusion and begins in the cortex of the lung, progressing inward along the interlobular septa toward the hilus like a pleurogenous interstitial pneumonia. These cases are characterized by rather wide-spread physical findings, including impairment of percussion resonance, pathological breathing and mixed rales but there is little or no sputum and the x-ray findings are those of a thickened pleura.

It must not be supposed that radiography can in any way replace physical examination. Careful physical examination will generally predict the x-ray findings. When changes consist in an exudative process around a few scattered tubercles superficially located, the stethoscope will disclose them while the x-ray plate shows very little. Again disease of the ascending bronchi, though it appears to the radiologist far from the surface, soon causes changes in the percussion note and breathing. The x-ray plate will not tell you much about the actual apex of the lung and only gives partial information as to the activity of the process visualized, but the x-ray does give information regarding hilus tuberculosis which cannot be obtained in any other way.

The x-ray, in short, discloses the topography of the pathologic process but cannot be expected to give a pathologic or bacteriological diagnosis. Radiography should be used in conjunction with other methods and, when so used, is of the highest utility. It may confirm the diagnosis in a doubtful case, and will give assistance in the determination of the extent of the disease. It will also give information regarding the hilus region which physical diagnostic methods cannot replace. No diagnosis of tuberculosis should be made on x-ray findings alone and, regarding activity of the process, the stethoscope is the best guide.

There remains for consideration the status of the tuberculin reaction about which there has always been controversy and conflicting opinion. The tuberculin reaction is truly specific; it tells us only that tuberculosis infection has taken place. It is no test of clinical disease. The ordinary Von Pirquet test is positive in ninety per cent of healthy fourteen-year-olds and nearly every adult, and can, therefore, hardly be claimed a test of clinical disease. And yet tuberculosis is being constantly diagnosed on the basis of this test alone. The utility of this test is confined to the first few years of life.

The subcutaneous test is also not reliable. Upwards of fifty per cent of healthy people react with fever to injections of 1-5-10 mgm.OT. Obviously a test which gives such results in clinically healthy people is very unreliable, while a positive febrile reaction following tuberculin gives little reliable evidence upon which to establish a diagnosis. A negative reaction is of value in excluding tuberculosis. However, the tuberculin titer, as determined by graduated doses of tuberculin intracutaneously injected, is of some value in cases selected for tuberculin treatment. We can determine safe doses which will give therapeutic response.

Tuberculin should never be used for diagnosis subcutaneously until all other procedures have been exhausted and the diagnosis still in doubt and, even then, should only be used by one with training and qualifications to discover and interpret any reaction which may appear.

It will be well to remember that some individuals, like some experimental animals, do not react to tuberculin, even though harboring old infections. It must also be borne in mind that some people are skin sensitive but fail to react subcutaneously.

Regarding other tests such as complement fixation, demonstration of tubercle bacilli in the blood, the Arneth blood picture, and Wiedelholtz urine test; they have never reached a stage of practical value in diagnosis either of tuberculosis or of its activity.

In summarizing, I would suggest devoting chief attention to ordinary physical examination, especially light percussion, paying particular attention to the apical isthmus. It is here that one may expect definite changes. Tuberculosis cannot long exist without leaving its mark in the way of narrowing or shading of the apical isthmus.

Demonstration of tubercle bacilli in the sputum is still the only *absolute* proof we have of pulmonary tuberculosis. Unfortunately when found, the case is no longer strictly an early one. Next in importance is the presence of fine moist rales on expiratory cough or increased coughing, persistently found over one area, and of greater significance when found over the upper lobes or apices, combined with impaired percussion note and narrowing of the apical isthmus. Pulmonary tuberculosis is then a justifiable diagnosis until it can be excluded.

Rales and physical findings over the bases of the lungs should be considered non-tuberculous until tuberculosis can be proved.

In conclusion, there is no royal road to success in the diagnosis of pulmonary tuberculosis. A diagnosis should be made only after consideration of the clinical history, physical, roentgenological and laboratory findings, and other tests, including Wassermann, metabolic, etc. Then all the facts must be weighed and each given its proper value. Above all we must know what weight to attach to each particular kind of evidence, and we must not be misled by the novelty of one method, nor discouraged by the difficulty of mastering the other. Blind faith must not be placed in any one method. I think emphasis on this point is greatly needed. We should all like to diagnose our chest cases one hundred per cent correctly. But I fear some are diagnosing only seventy-five per cent of the manifest tuberculosis cases, and one hundred twenty per cent incipient ones. Any pulmonary physical sign, or combination of signs, may be present in tuberculosis of the lungs, and every one of them may be found in pulmonary diseases caused by bacteria other than the tubercle bacillus. As time goes on, I feel myself demanding more evidence and taking contantly a more conservative attitude, especially regarding what constitute incipient tuberculosis.

(The extensive bibliography, omitted for want of space, may be found in the author's reprints.)

FRACTURES AND DISLOCATIONS OF THE SPINE WITH REPORT OF FIVE CASES*

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TACOMA, WASH.

A discussion of the subject of Fractures and Dislocations of the Spine is especially important because the average surgeon has a very vague idea of what to do when confronted by these injuries, and there are no injuries in which it is more imperative that the surgeon should have a very definite program and be prepared for prompt action.

It is the purpose of this paper to outline briefly the general indications for operative treatment in fractures and dislocations of the spine. There is no doubt many helpless invalids could have secured good physical condition with nearly perfect efficiency if they had had the advantage of proper early operation, instead of being treated by the usual method of watchful waiting, and, on the other hand, many deaths have been precipitated and disabilities increased by unwise interference.

In a paper of this kind it is not permissible to go into anatomical detail. I would like however to have you recall a few of the cardinal facts of anatomy. The cervical vertebrae are light, the bodies small, and the position of the articular facets and transverse processes such that they have a great range of motion in every direction. In order that the spinal cord should be properly protected in this wide range of motion it is necessary that the spinal canal should be relatively large. On this account it is possible to have dislocation of the cervical vertebrae with marked deformity without injury to the cord. Also in the cervical region many dislocations are spontaneously reduced, and it is possible to have a dislocation to the extent of actually cutting the cord in two, with a springing back into position again so that there remains slight or no deformity, the x-ray findings being almost negative. The dorsal region is the fixed part of the spine, the intervertebral disks are thin, the position of the articular facets and spinous processes such that there is very little mobility. Fracture of the spine by direct violence may of course take place at any point. Fracture by indirect violence, as by bending or twisting, which is the usual method of fracture, is most likely to take place at the points where the movable part of the spine joins the fixed part, that is at the juction of the cervical and dorsal, and the dorsal and lumbar spine. Note also the fact that the main support of the spinal column lies in the articulations on the transverse processes. The laminæ and spinous processes have very little to do with supporting the spine. It is therefore possible to remove the laminæ and spinous processes of a large number of vertebrae in the operation of laminectomy without materially weakening the spine. Recall also the fact that the spinal cord is composed of non-medulated nerve fibres which are not capable of regeneration when once severed, while tha cauda equina, beginning at the level of the first lumbar vertebra at the termination of the cord, is composed of a bundle of ordinary nerve trunks which, if cut across, are capable of regeneration after being reunited.

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* Read before the Pierce County Medical Society, Nov. 8th, 1921.

In order to gain a rational conception upon which to base treatment, it is important to visualize just what happens to the cord in injuries resulting in cord damage.

The most serious are those cases in which, below the level of the injury, there is immediate and total paralysis. This means that the motor and sensory functions, including sphinter control, are totally destroyed. In these cases the actual injury may consist in a complete severance of the cord. These cases are hopeless. I wish to emphasize the fact, however, that to diagnose a complete severance of the cord, paralysis, motor and sensory, must be immediate and complete. If at first there is any function below the level of the lesion, even though later lost, it means that the cord has not been severed but that besides damage to the cord there have been added hemorrhage and edema from pressure. In the latter case there will be some return of function after a few days or weeks due to absorption of blood and subsidence of edema.

Most commonly, following injury to the spine, there are symptoms of a partial transverse lesion of the cord. Motor and sensory paralysis is not complete. If the anterior part of the cord is more damaged the motor symptoms will be greater. If the posterior part of the cord is more involved the sensory symptoms will predominate. The latter is true particularly in fractured spinous processes and laminæ in injury by direct violence. Many cases of fractured vertebrae give severe nerve root symptoms with little or no cord involvement. I am not going into detail regarding level symptoms. I might state however that the level symptoms do not always indicate the location of the bone injury as they may appear higher, due to hemorrhage and edema of the cord. Cases of partial transverse lesion, as you know, tend to improve when put at rest, owing to absorption of blood and subsidence of edema. The residual condition depends on the actual cord damage and the amount of normal nerve fibres left passing through the damaged field.

Therefore the actual spinal cord condition in all cases, except those of total severing of the cord, consists first, in the existence of some normal nerve fibres transmitting impulses across the area of injury; second, in the presence of many damaged but not entirely destroyed nerve fibres capable of regeneration, if given a chance; third, in the occurrence of some totally demolished nerve fibres; fourth, hemorrhage and edema; and lastly, in some cases, bony pressure. It has been proved that if pressure is continuous on the cord for 48 or 72 hours, so that the circulation of fluids is shut off, both normal and damaged nerve fibres will, to a large extent, be totally destroyed. A failure therefore to relieve this pressure on the injured cord within at least 72 hours will result in irreparable damage. If we treat these cases by waiting for pressure to be relieved by absorption of hemorrhage, which takes at least 2 to 5 weeks, permanent injury of nerve fibres will result which could have been prevented by an early operation of decompression. As a general proposition therefore all injuries to the cord, which cannot be demonstrated to consist of total severance, should be operated on as emergencies within a few hours by a laminectomy. For if we wait for absorption of blood and relief of pressure from edema, much nerve tissue will be destroyed which could have been saved by prompt relief of pressure, and the final results will not be so good as could be obtained by an early operation. Cases which show a primary total transverse lesion with total motor and sensory paralysis should be carefully watched and, if there is even a slight return of function below the lesion, they should be promptly operated upon to secure quick relief of pressure and the maximum function of nerve tissue. These cases will give poor enough results at best but watchful waiting makes hopeless invalids of patients who might be given a fair degree of function. All fractures in the lumbar region should be subjected to operation, even those showing total transverse lesion. The injury involves the cauda equina, which is a bundle of medullated nerves, that will regenerate if reunited. There is little danger to life in a laminectomy in this region and the possible benefit far outweighs the danger involved.

Some surgeons, as Norman Sharpe, go farther than this and advocate prompt operation in cases of immediate total paralysis in injuries in the upper cord, on the principle that many cases of apparent complete transverse lesion are not due to an actual severing of the cord, and if we wait until there is a partial return of function before we do a decompressive operation, irreparable injury will have occurred. Furthermore, it is said by some writers that one can do no harm to these hopeless cases and a speedy operation should be done on the remote chance of improving the condition. According to Sharpe the only reliable sign of complete severance of the cord, and the only contra-indication to early operation, is bony deformity so great as to prove without a doubt complete obliteration of the spinal canal. I believe this teaching is too radical for every day practice. It is a very dangerous thing to operate on the cervical cord in the presence of fresh injury with total paralysis. Opening the dura under these conditions nearly always results in prompt death, and the dangers far outweigh the possible benefits. In conservative treatment life is usually prolonged at least a few weeks and, if there is beginning return of function, operation can then be done under more favorable conditions with some chance of doing good.

I should like to affirm the following as a safe rule to follow in fractures or dislocations of the spine involving the cord: Operate in all cases of severe cord damage, except in primary total transverse lesion in the cervical and dorsal regions. In the latter condition wait, and, if there is evidence of returning function, do a prompt decompression as soon as it is evident that the cord is not wholly severed. In cases with only slight cord symptoms operation should be deferred unless there is a progressive increase of pressure symptoms. These nearly all improve and the prognosis is better without than with a laminectomy. The attempt to remove blood by lumbar puncture may be indicated in many cases with or without radical operation. I might remark that no rules in surgery can replace good surgical judgment in individual instances. The cervical cord, especially, should be held in great respect and manipulation and operation here should be done only after careful consideration of the probable results obtainable, and the dangers involved.

Beside fractures of the spine with injury to the cord, there is a large percentage of spinal fractures and dislocations, estimated by Bailey as over 30 per cent, in which there are no cord symptoms whatever. In many of these there are very severe bone injuries with considerable displacement; especially do these occur in the cervical and lumbar regions where the mobility of the spine is the greatest. The treatment of such cases is immobilization. Operation for the purpose of reduction of bony deformity in symptomless fractures and dislocations, or manipulation under an anæsthetic, are commonly useless, and are often dangerous. One is likely to increase disability and convert a benign case into one with marked cord involvement and, especially in the cervical region, to cause sudden death.

There is no doubt that many factures of the spine pass undiagnosed and are considered sprains. The back is a part of the anatomy in which it is difficult to detect injuries, and in which it is hard often to disprove claims for injuries without most searching examination. In this day of paternalism, when the state is expected to assume responsibility for all disabilities which may in the most remote manner be connected with industry, it is very important to differentiate real from assumed injuries. The back is the paradise of the fakir and malingerer, and I have seen more damage suits and malingering on the basis of alleged injuries to the back than of any part of the anatomy. It must be recognized on the other hand that many serious injuries to the spine, and even fractures, pass undiagnosed because they produce no cord symptoms and no deformity, and we have no right to brand anyone as a fakir or malingerer for alleged injury to the back without first making a painstaking examination and excluding fractures by careful x-rays.

The following cases will illustrate some of the points which I have attempted to bring out:

Case 1. Man, A. J. L. Aged 67, Injured March 28th, 1917. An automobile in which he was riding was struck by a passenger train. The machine was thrown into the air and he was found underneath the fender about 75 feet away. Among other injuries he had a dislocation of the 7th cervical vertebra as shown. In spite of the mark-

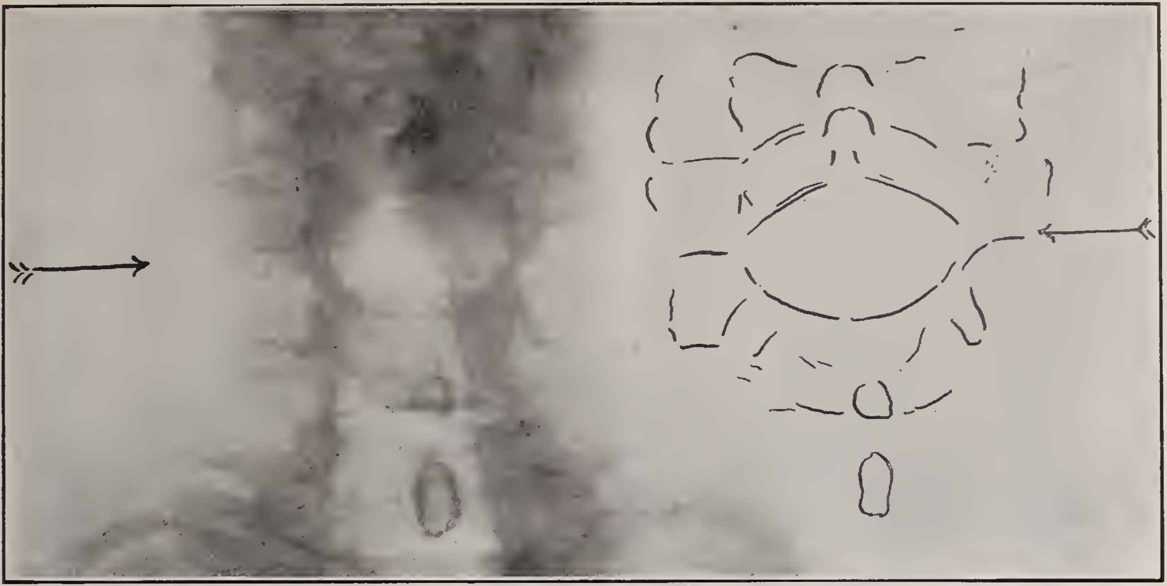


Fig. 1. Case 1. A. J. I. Showing dislocation of the 7th cervical vertebrae. Lateral view.

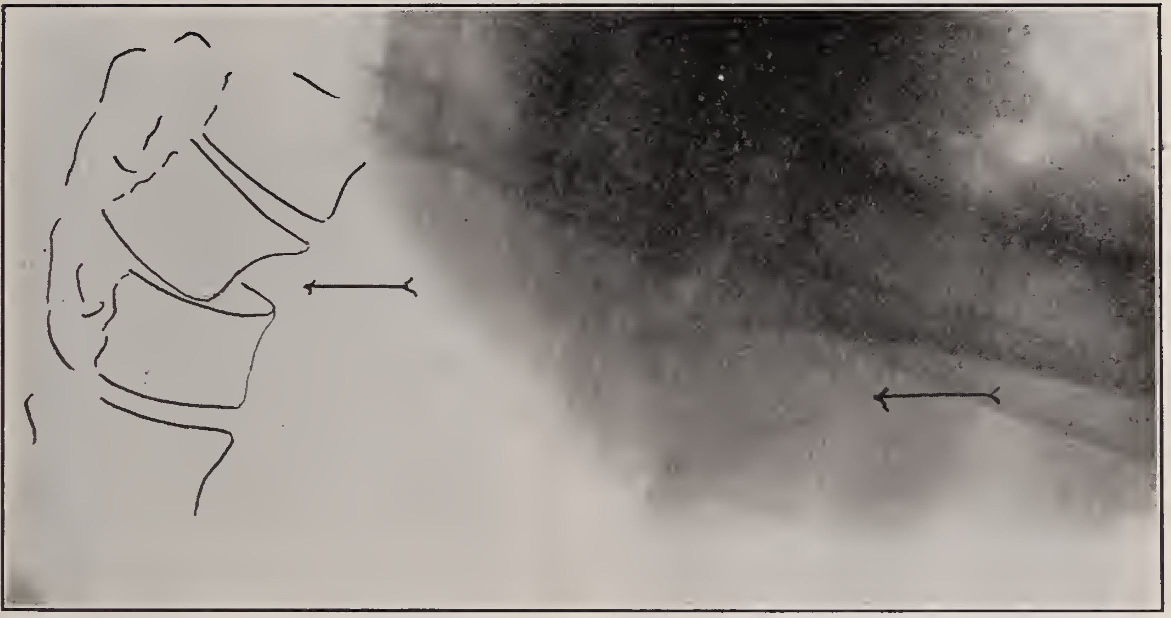


Fig. 2. Case 1. A. J. I. Showing a separation of the Spinous processes of the 6th and 7th cervical vertebrae due to forward dislocation.

ed dislocation he had no cord symptoms or, if present, they were slight and transient. He had nerve root symptoms involving chiefly the 7th cervical to 1st dorsal both sides, more marked on left. He wore a jury mask about 4 weeks after which time he had no fixation. He has improved and now his only symptoms are stiffness of the neck and a residual partial disability, of the left arm. I mention this case to emphasize—First, the amount of cervical dislocation which may occur without cord involvement, and, second, the fact that without reduction this man is in good condition and efficient.

An attempt to operate on this case, or to manipulate under an anaesthetic in order to reduce the dis location, would have been dangerous. It might have been futile, and even if successful, would not have been apt to have given him any better function than he now has. Persistent symptoms due to irritation of the sensory roots might have justified attempts at reduction, or an operation for relief of pressure on the nerve roots.

Case 2. A. J. Male. Aged 33. (Service of Yocom, Curran & nodds). Oct. 28th, 1920, an automobile in which he was riding fell from a 40-foot trestle. He had immediate total paralysis below the nipple line, pain and numbness in shoulders and arms due to injury to the roots of the brachial plexus. He lived until Feb. 18th, 1921, and during this time had not the slightest

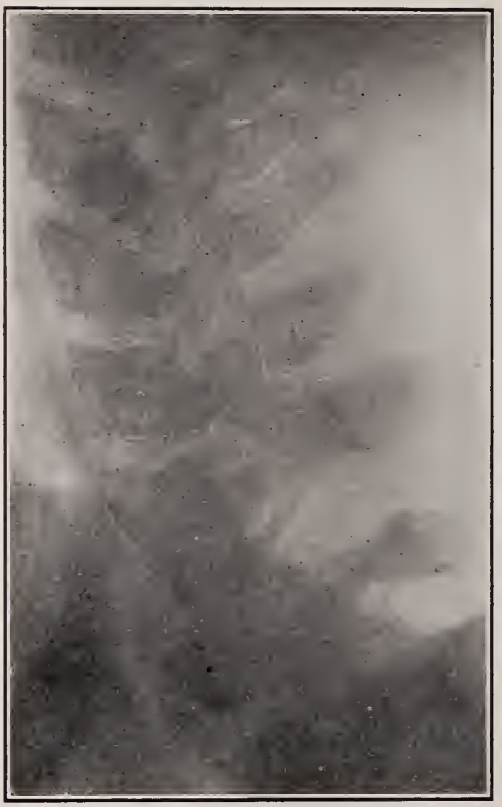


Fig. 3. Lateral view Case No. 2. Showing no displacement of vertebrae.

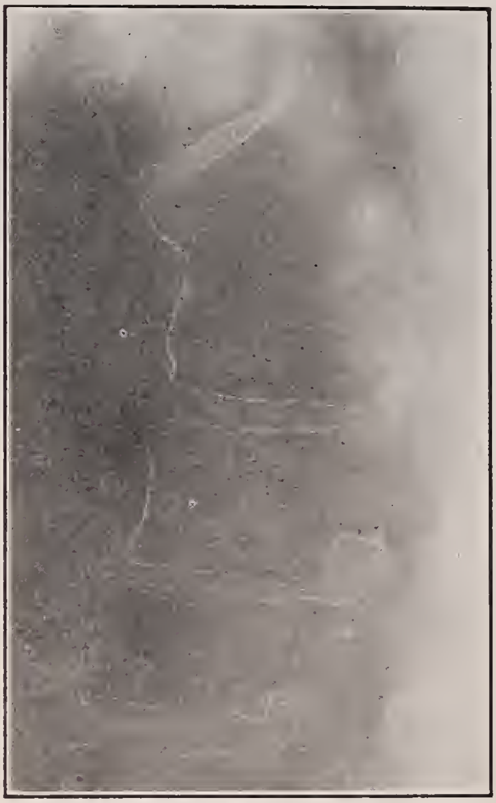


Fig. 6. Lateral view Case 3. Taken several months after injury. An ankylosis 12th dorsal, and 1st lumbar and compression fracture 3rd lumbar.

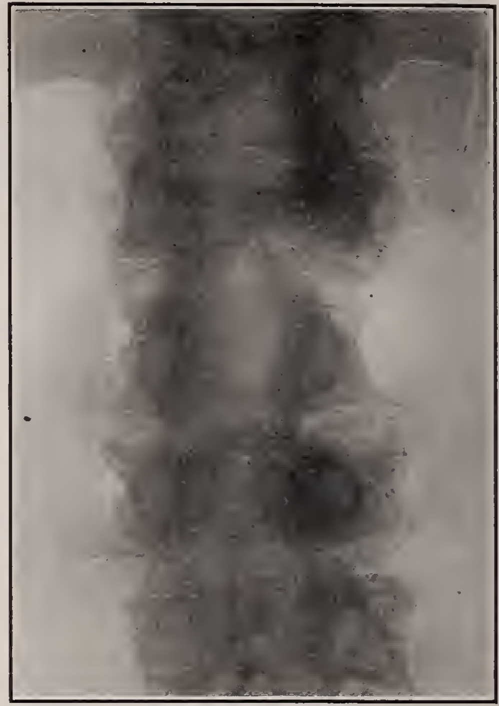


Fig. 5. Anterior-posterior view Case 3. Showing compression fracture bodies, 1st and 3rd lumbar vertebrae.

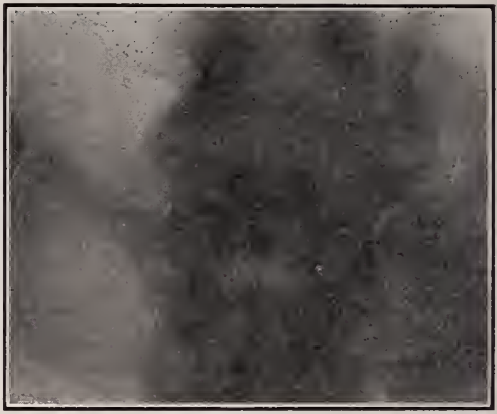


Fig. 7. Anterior-posterior view Case 5. Taken several months after injury. Showing ankylosis between 12th dorsal and 1st lumbar.

return of sensation or motion below the level of the lesion. The clinical symptoms indicated a complete severing of the cord at about the level of the first dorsal. This was confirmed clinically by the fact that at no time during his life was there any return of function. Before death there was an ascending degeneration of the cervical cord. Unfortunately no autopsy was obtained. This man had plenty of consultation and there was some difference of opinion relative to operative indications. However I report this case to emphasize the following points: First, This was a case of immediate total transverse lesion in the cervical region. There was good reason to believe that the cord was severed. I have emphasized the fact that the operative risks in case of total paralysis in this region are very great. If the condition had cleared up somewhat with time it would have been justifiable to operate as operation at this time would have

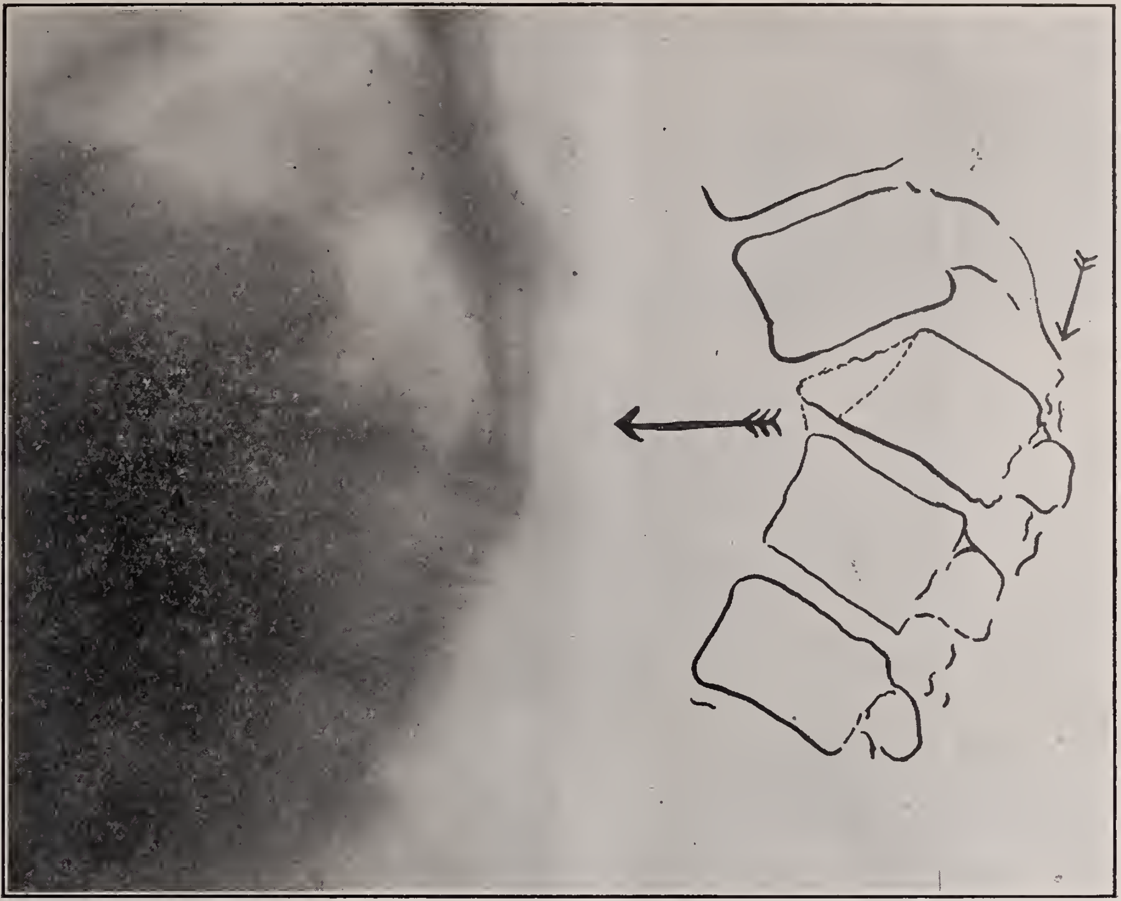


Fig. 8. Lateral view Case 5. Taken several months after injury, showing callus formation.

Fig. 9. Case 5. Taken September, 1921.

been immediately less dangerous and might have done some good.

Second—This case illustrates a point which I have mentioned viz.: In spite of a total transverse lesion the x-ray findings are almost negative and what happened here was no doubt a dislocation with severing of the cord and a reposition or springing back into position again. I should like to stress the fact that operation does not depend on x-ray findings but upon cord symptoms.

Case 3. Man, L. D. Age 40. Feb. 2nd, 1921, jumped out of a window and fell about 25 feet striking on the soft sod in a squatting position. There was considerable swelling of the soft tissues of the back on a level of the upper lumbar spine. X-ray showed a compression fracture of the bodies of the 12th dorsal and 1st and 3rd lumbar vertebrae. There was considerable angular deformity in this region. Neurological examination showed that he could move the right lower extremity slightly and there were slight patellar and Achilles tendon reflexes. No Babinski. Left leg and thigh reflexes all gone. There was anesthesia indicating involvement of the sensory roots of the lower lumbar and sacral nerves. Bladder and rectal paralysis. Operation about 18 hours following injury. The laminae of the 12th dorsal and 1st and 2nd lumbar vertebrae were removed. There was definite bony pressure at the level of the 12th dorsal and the dural sac bulged into the field and did not pulsate. Removal of the laminae gave normal pulsation. He left the hospital the 20th day following the operation. At this time there was considerable improvement. He could move both legs and there was a return of the reflexes. There was also a slight return of bladder sense. Examination Sept. 1921 shows still a saddle shaped area of anaesthesia. There is some weakness of the lower extremities but he is able to get around well with a cane. Bladder function still impaired. I report this case to emphasize first—a lesion in this part of the spine, whether partial or total, is always an indication for prompt operation in order to remove pressure and to insure maximum nerve tissue. In view of the findings at time of operation the function in this case is no doubt considerably better with, than without, operation. (Figs. 5 and 6).

Case 4. Y. O. Injured Sept. 20th, 1920. A hand car on which he was riding was thrown off the track and he fell on a pile of rocks. When admitted to the hospital he was able to walk and was apparently not badly injured. He had however a very severe traumatic ulceration over the dorso-lumbar junction with considerable swelling masking the spinal deformity. In fact the actual spinal injury was at first entirely overlooked. X-ray showed a very marked compression fracture of the 12 dorsal vertebrae. He had no cord symptoms and while he complained of difficulties in urination he had no paralysis of the bladder and the slight symptoms were transient lasting only about two days. He has some pain in the back and slight radiating pains to the lower abdomen and thighs. He was kept in bed for twelve weeks until the ulceration had entirely healed, then permitted to get up. His disability however on account of pain in the back was so great that he was put to bed again and Dec. 11th, about twelve weeks after the injury, a tibial bone transplant was done. The transplant united satisfactorily, but I am not prepared to say how much good it did, or whether it did any good. He was kept in bed ten weeks longer and permitted to get up with a brace. Shortly after this he went back to Japan and I am unable to state his present condition. This case might illustrate the following points: First, the extent of compression fracture which may occur with slight or no cord symptoms; second, concerning bone grafting, I do not think this case proves anything for or against bone transplants. Certainly not all cases are benefited by this kind of splinting. I doubt if it was indicated in this case. Marshall in the Boston Medical and Surgical Journal of Feb. 5th, 1920, states that compression fractures of the bodies of the vertebrae are not usually benefited by transplants. In cases such as this, or even in less marked cases of fracture of the vertebrae without cord symptoms, cord symptoms may develop later due to callous formation or collapse of the vertebrae. In these cases the indication of course would be to do a laminectomy.

Case 5. G. W., Mechanic. Age 24. (Service of Drs. Dodds and Curran). Injured Feb. 21st, 1921. He was sitting under a Ford car when the chain holding the car slipped and the car came down on his shoulders jack-knifing his back and dislocating the first lumbar vertebrae on the 1th dorsal. An attempt was made to reduce this without success. On Feb. 25th an attempt was made to reduce under an open operation but without success. He was put back to bed where he remained for just one month when he was able to get up and walk around. He went home April 1st. Since this time he has been able to get around well. He did not work for about two months and then began to do light work and is gradually getting back to apparently full efficiency. I should like to emphasize that in spite of this most marked dislocation and deformity he never had the slightest symptom of cord lesion nor even any nerve root symptoms. It is remarkable that such a high grade deformity is possible without injuring at least slightly some nerve tissues. Neurologically however this man never had the slightest symptom. Today his condition is excellent. He stands straight, the deformity which is apparent in the dorso-lumbar region being compensated by the rest of the spine. The mobility of the back is good. He has not the slightest pain and apparently only slight weakness and he promises in spite of his crooked spine to secure perfect function. This case illustrates the following—First, the amount of spinal dislocation in the lumbar region without cord or root symptoms; second, the difficulty and possibly the futility of attempting to reduce this kind of a dislocation. (Figs. 7, 8, 9).

DISLOCATED CERVICAL VERTEBRAE

Roger Anderson, M.D.

TACOMA CLINIC, WASH.

While dislocations are not rare in industrial centers, we believe the following case is worthy of a report, as it presents an extreme dislocation of the 4th upon the 5th cervical vertebrae without any cord lesions. Authorities maintain, on account of great mobility of cervical vertebrae that this anomaly may exist without symptoms more often than other vertebral divisions.

History. Patient (Case No. 12744) injured his neck on December 27th, 1920, by falling backwards and landing on the back of his head. There was no loss of consciousness or paralysis. Patient was dazed and complained only of his neck being sore and stiff. Went to the company doctors where local treatment was instituted, such as hot dressings, alpine rays. Meanwhile, patient was up and around with very little discomfort.

Entering Complaint. On the 20th day following accident, patient first appeared at our office. His present complaint was soreness and stiffness of the neck and the shoulders. Had very little distress when up and around but at night he would be restless and weary, and at times would awaken on account of pains of a dull nature in neck and shoulders. Resp.—G.U.—G.I.—C.V.—E.E.N. & T.—and nervous, skeletal history, all negative except for shortness of breath on exertion.

Examination. White male of 47 years, weight 165 pounds. Walks with normal gait but has a characteristic head poise, with chin elevated and occiput retracted and appearance of ankylosis of cervical vertebrae. General examination practically negative, except for visible and palpable deformity of neck (fig 1). The spine of 4th cervical vertebrae was palpable and prominent. Some local tenderness on pressure on forced movement on neck. All motions of cervical vertebrae normal but only about 25 per cent of normal range present. No paresis, paralysis

Fig. 2

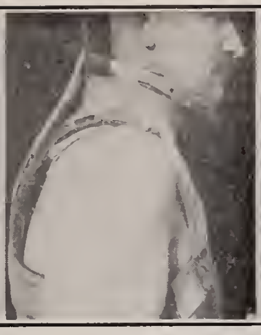


Fig. 3

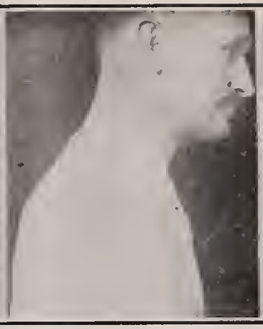


Fig. 1

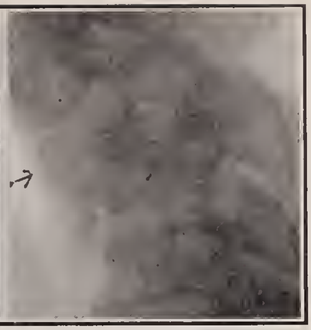


Fig. 4

spinal cord, or sympathetic nerve findings present. Laboratory findings negative.

X-Ray Report. January 25th, 1921. Showed a dislocation anteriorly of 4th cervical upon the 5th vertebrae for distant of about 2 cm. (Fig. 2).

Choice of Methods for Treatment. (1) Massage or no treatment; (2) Open reduction; (3) Manipulation and reduction under anesthetic; (4) Immobilization by means of plaster-of-paris casts and braces. The dangers and end results of different methods were explained to the patient and he made the choice. Treatment instituted in this case was a combination of the manipulation and fixation methods. After a hazardous attempt to reduce the dislocation by manipulation under ether proving unsuccessful, we had to resort to the slower and more conservative method of casts and braces.

For several days before an anesthetic was given, about 20 pounds traction was applied to head by means of Sayre's bandage. While under ether, the most strenuous efforts were made to reduce the dislocation under guidance of a bedside x-ray machine and numrous hasty radiographs, but without results either for better or worse. The immobilization method was the only alternative, so a cutlass of plaster-of-paris was applied. Neck was kept in casts up to March 11, 1921, when a brace was applied which he has been wearing ever since (fig. 3). Soon after going into casts, all pain left, and at the end of six months after accident, patient went to work but found it too hard for him at that time.

Present Condition. One Year After Accident, December 27th, 1921. (Fig. 4).

Patient has no pain, complains only of some stiffness in neck. No nerve complication at all, and there never has been in spite of marked dislocation. Patient is gradually being weaned away from the brace.

Last x-ray report reveals callus formations with resulting ankylosis, and also absorption of the 4th vertebra. Alignment is gradually approaching the normal.

Summary: (1) Remarkable amount of dislocation without spinal cord injury; (2) The difficulty in reduction of cervical dislocations by manipulation under ether; (3) The excellent functional end results of some cervical dislocations by conservative method of immobilization.

DISLOCATION OF KNEE

L. H. Meadows, M. D.
CLEAR LAKE, WASH.

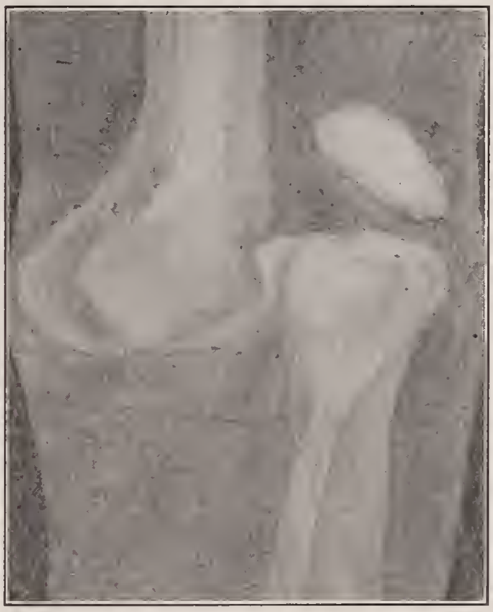
J. R., male, age 40, employed by the Clear Lake Lumber Co., as bridgeman, was injured by a fall, March 30, 1917.

Diagnosis. Forward dislocation of the knee.

Treatment. Easily reduced under ether by traction on the semiflexed leg and backward pressure on front of tibia.

Great care should be taken against over-extension and pressure on the vessels stretched across the popliteal space for fear of rupture.

This patient insisted on leaving the hospital the second day. He walked as well as ever and without discomfort with an elastic bandage on the knee for a short time. He returned to work on the twentieth day with slight, if any disability.



This radiograph shows a rare dislocation, especially the complete forward variety. It would appear that every one of the fourteen ligaments had been ruptured.

The case is interesting because of the very short period of disability, and because of the great stretching and displacement to which the joints of certain persons may be subjected, voluntarily or involuntarily, without much inconvenience.

The 1921 report of the Washington Department of Labor and Industries shows fourteen cases of dislocation of the knee, with average temporary disability of 25.1 days and average permanent partial disability of 83.9 days. The ratio for the year of knee dislocation was 16 per cent of all dislocations.

CONGENITAL ABSENCE OF BOTH TIBIAE, TREATED BY BONE TRANSPLANTS*

Russell T. Congdon, M.D., F.A.C.S.
WENATCHEE, WASH.

Absence of the tibiae is one of the less frequent of the congenital deformities. There are comparatively few reports in our literature of cases treated by operative means, and there seems to be no established method of operative procdure which is generally adaptable. This is partly because of the fact that there is marked variation in the degree of deformity present. The deformities which are fairly constant as a result of congenital absence of the tibiae are, as would be expected, shortening, talipes, and lack of stability at the knee. There may be limitation of extension of the knee.

Supernumerary toes, absence of toes, cleft palate, and other congenital malformations frequently accompany this condition. For a discussion of these, and the question of etiology of congenital absence of the tibiae, the reader is referred to Gaenslen's article[1].

The methods employed in the few cases reported in the literature, which the writer has been able to review, have varied considerably.

Myers[2], reports a case in a boy of two years, with a complete absence of the right tibiae, with shortening of the fibula. He obtained a very useful limb by transplanting the head of the fibula to a position between the femoral condyles. He was able to accomplish this by division of a portion of the capsule and external lateral ligament, and gained three-fourths of an inch in length. He also did an arthrodesis of the ankle joint. In a later report[3], six years after the operation, he states that there are two inches of shortening, and the child wears a brace to give stability at the knee joint.

Parona[4], in a child of twenty months with partial absence of the tibiae, resected the lower end of the femur and head of the fibula, adjusted the bone ends, and secured straight position with splints. Parona thought he observed after some weeks, an ossification of the fibrous bands representing the deficient tibiae, beginning to occur under the stimulation of use. (Myers).

Gaenslen[1], in order to produce a bony ankylosis and obtain stability at the knee, utilized an autogenous bone graft from the femur. His case was a female age two, with bilateral, complete tibial defect. The upper end of the fibula articulated with the femur at the posterior upper extremity of the outer condyle. He found it impossible to bring the subluxated head of the fibula into end-to-end relation to femur, until the entire epiphysis of the fibula, and a fairly thick portion of the femoral epiphysis, were removed. A graft was then inserted into the split end of the fibula and sutured there, and in contact with the femur, to bridge the line of contact. He secured a firm bony union. The operation was done on one leg only.

REPORT OF CASE

The following case has been under the care of the writer for three years, and certain observations in connection with its treatment are of sufficient interest to warrant recording.

The case is a male child, three years of age when he first came for treatment. The parents are normal. There is no family history of malformation. Examination was as follows:

The child is normally developed, except the lower legs which are short, presenting a marked disproportion to the thighs. There is an absence of each tibia. The fibula is present, but does not articulate with the femur, its upper end occupying a position two and one-half inches above the lower end of the femur, as though it

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* Read before the Thirty-Second Annual Meeting of Washington State Medical Association, Seattle, Wash., Sept. 1-2, 1921.

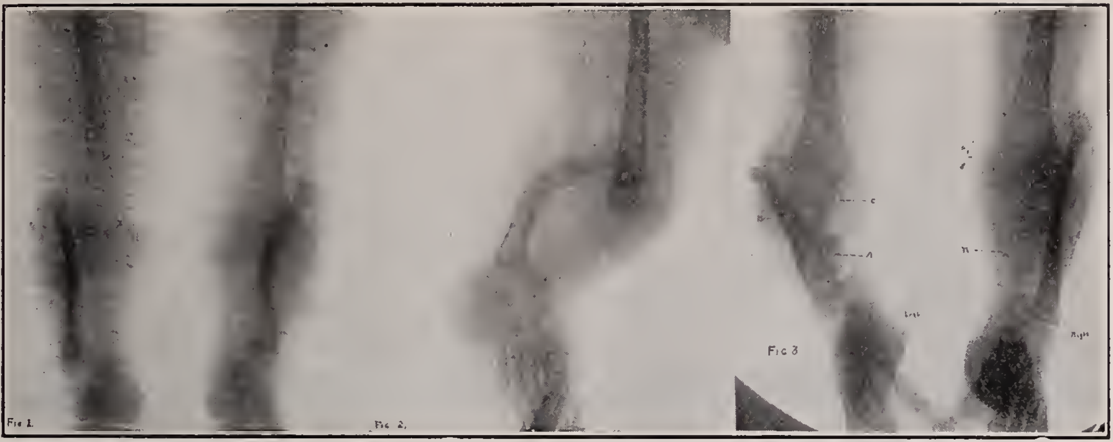


Fig. 1 Fig. 2 Fig. 5

had been gradually dislocated upward by the excessive weight bearing in the absence of the tibial support. The fibula is markedly curved backward, and is much larger in diameter than the normal. Figs. 1 and 2). There is a scar at the base of the great toe on each foot, resulting, the parents state, from the removal a year previously, of supernumerary toes. The child walks with difficulty, with thé feet inverted and bearing his weight on their outer sides (congenital talipes). Supporting braces had been worn for a year.

Our first plan in attacking the case was to attempt to get the fibula down so that its upper extremity rested beneath the femoral condyles. With this in view, extension by modified Buck's during the night, and modified Thomas splints during the daytime, were applied for six months. This failed to produce any gain in length, and an open operation was resorted to.

The first operation was done upon the left leg, April 22, 1919. The upper third of the fibula was freed from its attachments to the tissues about the lower end of the femur. It was found impossible however, without cross-cutting more of the tissues than seemed safe, to lengthen the leg sufficiently to allow the fibula to be drawn down so that its head could be shifted to a position beneath the femoral condyles.

Failing in this, we decided to insert bone transplants as substitutes for the missing tibiae.

An incision was made along the anterior surface of the left leg, and a space prepared to receive the transplant, for which it was determined to utilize the portion of the fibula, about two inches in length, extending above the femoral condyles. In preparing the bed for the receipt of the transplant, it was found that a cartilage was present, evidently the tibial cartilage in which ossification had not taken place.

A considerable portion of this cartilage was excised to make a space for the transplant. The upper end of the fibula was then resected with its epiphysis, and placed in the space prepared for it. It was not placed in contact with other bone. The incisions were closed, and a plaster cast applied, including the knee and ankle. Uneventful recovery.

Fig. 3 shows the transplant (A) twenty-two month after operation. Two further transplants were done on the left leg, one in June, 1920, the other in Feb., 1921. The transplants were taken from the femur, and placed in contact with fibula, with the object of affording additional support for the lower end of the femur. The first of these, (B, Fig. 3) has undergone some absorption. The second, (C, Fig. 5) was mortised into the fibula, below, and so placed that it extended upward and inward to the lower end of the femur; a technique somewhat similar to that of Albee, in treating a case of congenital absence of the radius. This graft has increased in diameter, and is evidently functioning in weight bearing.

In treating the right leg, a different procedure was followed, and a very interesting development has been observed. This leg was operated Dec. 1, 1919. An incision was made, and a careful dissection done, to prepare a space along the inner surface of the fibula for reception of the transplant. A transplant from

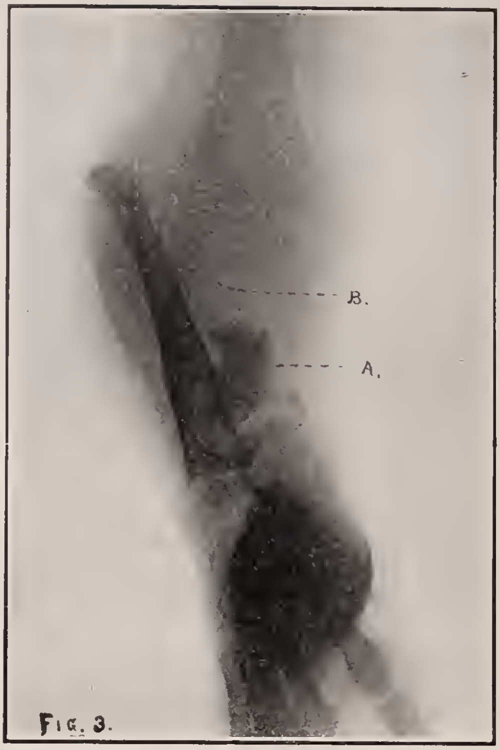


FIG. 3.

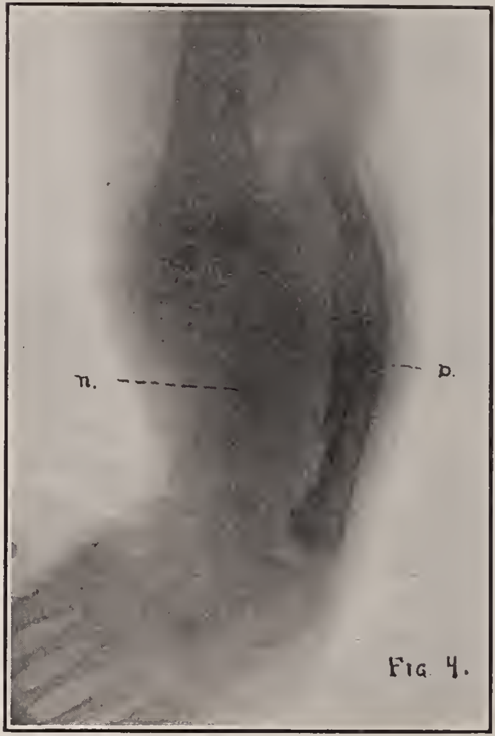


FIG. 4.

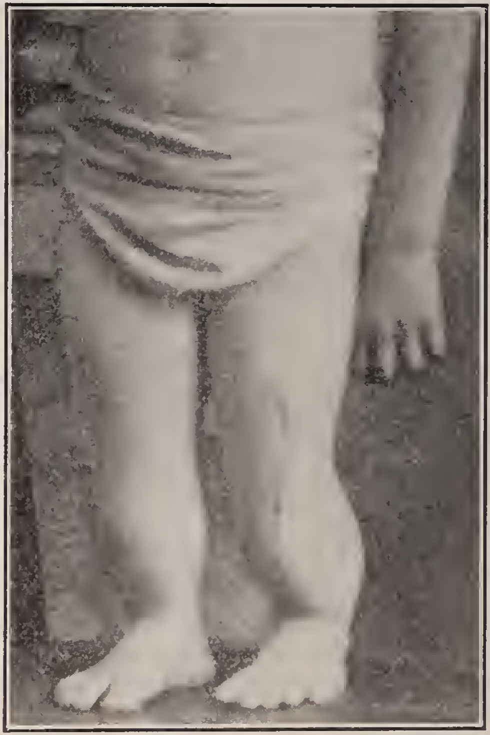
femur was placed in contact with the fibula. A cartilage occupying the position of the tibia was left undisturbed, but the transplant lay in close proximity to this cartilage. (Fig. 4-D).

In the radiogram made one month later, a small area of increasing density can be clearly seen, in the position corresponding to that of the cartilage of the unformed tibia. This is evidently an area of ossification, but was overlooked until radiograms taken months later showed large areas of bone formation.

A radiogram made nineteen months after the operation shows a very marked increase in bone formation to the inner side of the fibula in the position of the cartilagenous tibiae. (Fig. 5-N). The transplant has been absorbed.

Although it is possible that ossification was delayed until the fourth year, and occurred at this time independently of the introduction of a bone graft, this rapid bone formation following the introduction of an autogenous transplant, suggests that the transplant may have been an important factor, possibly arousing a dormant center of ossification to activity.

At the present time, two and one-half years after treatment was started, there is markedly improved stability and the talipes is largely corrected, the child walking with the feet in normal position. No braces are worn. (Last cut). The right leg has better stability.



COMMENT

From our observations in this case, it is clearly evident that ossification may occur, even though delayed up to the third year, if a cartilage is present representing the congenitally absent bone. Therefore, any interference to the extent of partial removal of such cartilage is, of course, contraindicated.

Just what influence the introduction of an autogenous transplant had on the occurrence of ossification at such a late period, is a matter of speculation. Although similar observations on the late occurrence of ossification may have been made, the writer has been unable to find any reference to the same.

Comparison of the results obtained on the two legs has led us to regard unfavorably the resection of a part of the fibula. If the head of the fibula cannot be brought down below the femoral condyles, greater stability will be obtained by allowing the over-riding portion to remain, and taking transplants from the femur.

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SUBPHRENIC ABSCESS

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Subphrenic abscess is the term applied to a condition which is accompanied by an abscess in a more or less intimate relation with the under surface of the diaphragm. The most common form, developing intraperitoneally, may be subhepatic as well as subphrenic. The process, however, may also develop extraperitoneally. This condition is not uncommon but it may be overlooked, particularly is this true if a radiographic examination is omitted.

Any infection in the abdomen or chest may be complicated in this manner and it should always be kept in mind. It is generally considered that about eighty per cent of subphrenic abscesses are produced by either the perforation of the anterior or posterior wall of the stomach from ulcer. We doubt if so large a percentage arises from this cause. A subphrenic abscess may also develop from a ruptured liver or lung abscess into the subphrenic space which is uncovered by peritoneum. An empyema may rupture through the diaphragm producing such an abscess. Retroperitoneally the perforated appendical abscess commonly burrows its way upward to form a subphrenic abscess. Suppuration of the kidneys, vertebrae or ribs may also produce such a condition. Traumatism of the thorax, such as a fractured lower rib, has been a cause. Subphrenic abscess begins with fever.

There is pain in the upper abdomen, possibly with vomiting and constipation, also pain on increased respiratory movements radiating to the shoulder. On palpation there is marked muscular rigidity of the upper abdominal muscles on the affected side, with dullness or tympany, depending on the contents of the abscess. The lower intercostal spaces may, or may not, be bulging, particularly is this true in children. No doubt the most helpful method we have for definitely determining a subphrenic abscess is by x-ray. The blood count is very important in indicating the existence of suppuration.

Treatment consists in opening and draining the abscess wherever it is most accessible. This may be done by opening the anterior abdominal wall with perhaps counter-openings. If the abscess does not project anteriorally, the best and most common route used is through the thorax, as in the case of an abscess of the liver. A portion of the eighth or ninth rib may be resected in about the midaxillary line. If an empyema exists, the pleura may be opened and its cavity drained. If, however, the pleural cavity is not involved, it is best not to open it and, if it be opened accidentally, it should be closed by suture before opening the diaphragm. The aspirating needle should first be used before making the opening in the diaphragm. If the abscess is of long standing, the wall is found to be thickened and well defined, drainage then continues for a long time and is accompanied by a marked fluctuation of fibrile symptoms.

Case 1. History. Patient a single man, age fifty, farmer, family history negative. He denies all venereal infection, has never been sick, is a rugged type, although small of stature. Has good habits.

Three months previous to being brought to the hospital, the man was kicked by a horse over the right lower thoracic region. He suffered from pain and was distressed in the lower chest and upper abdomen. He had taken medicine and been given treatment at the suggestion of friends, all without the least relief. His condition became gradually worse and on September 22, 1920, he

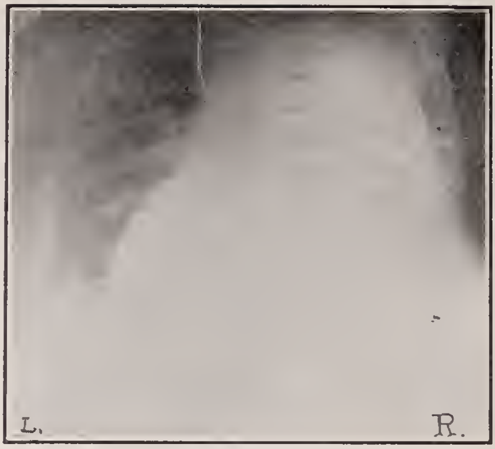


Fig. A. Pleural effusion and subphrenic abscess.

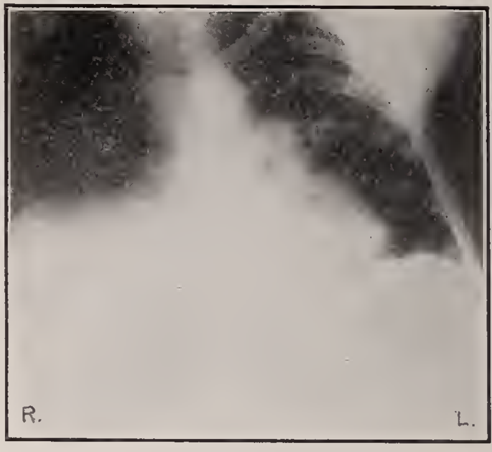


Fig. B. Right subphrenic abscess with elevation of right diaphragm.

entered the hospital. We found, on percussion, a marked dullness which extended as high as the third interspace on the right side, and the liver dullness extended downward below its normal position. There was limitation of the respiratory movements of the right side. Temperature was 102 F., pulse 120 and respiration 30, leucocytosis 14,600 with 81 per cent polymorphs. Urine showed many hyaline and hylo-granular and pus casts, also a trace of albumin. There was a marked jaundice.

Fluoroscopic and radiographic examination revealed a lack of excursion of the diaphragm of the right side, while the left was normal. The diaphragmatic curve was high and regular on the right side, extending up to the third interspace and the shadow showed that the lower liver margin was pushed downward. The shadow did not show a straight line, as it would have had, had free fluid been present in the pleural cavity. For this reason, we concluded it was a subphrenic abscess and not an empyema. (Fig. B). The radiograph also showed a fractured rib. Radiograph and screening were made in the upright position.

Treatment. This subphrenic abscess could best be approached through the thorax and a portion of the eighth rib was resected in the midaxillary line. The pleura was pushed upward and an aspirating needle was inserted through the diaphragm and pus. of a colon bacillus type, was withdrawn. A large opening was made and about three quarts of pus evacuated. Two large drainage tubes were inserted and made fast to the skin with a silk worm suture.

Progress. In the drainage of a subphrenic abscess progress is slow, this being true of any large abscess which has been walled off by fibrous tissue. There was a wide range of fluctuation of temperature, pulse and respiration and other febrile symptoms. In this case, after about 18 months the patient regained his strength, increased in weight and drainage stopped.

Case II. Acute Peritonitis followed by Subphrenic abscess and Pleurisy with effusion.

The occurrence of a subphrenic abscess is not an uncommon complication following acute localized peritonitis from a ruptured appendix. The process of development is simple and its pathology is well understood, but when complicated with a pleuritic effusion, we may be led into grave error by believing we have only an empyema or a simple pleural effusion. A subphrenic abscess complicated by a pleural effusion of the right side, cannot be differentiated from an empyema by either the physical or radiographic findings as the shadows blend. The following report is an example.

This history was obtained from the doctor who operated upon a twelve year old boy two weeks previous to the time we were called in consultation. The physician stated that the patient had suffered from acute abdominal pain which was first located in the epigastrium and later became localized in the right lower quadrant of the abdomen. He was watched for a few days hoping the attack would not necessitate surgical operation. The boy had fever, chills, rapid pulse and respiration, vomiting and a rigid and tender abdomen. It was finally decided to operate. A right rectus incision was made and a large amount of free pus was found in the abdominal cavity. A ruptured appendix was removed and two cigarette drains were placed in the upper angle of the wound. He stated the abdominal condition seemed to improve but respiration, temperature and pulse did not decline and his general condition became worse. In going over the history, the nurse who administered the anesthetic, stated that there seemed to be abnormal limitation of movement of the right chest during the anesthesia.

At the time we were called in consultation, the record showed that those two weeks were stormy for the patient when there should have been an improvement. We determined that the right chest was almost completely dull on percussion, and extreme difficulty in breathing was noticeable. The patient's temperature was 103 deg. F., respiration 46, pulse 130 and he was very much distressed.

A radiograph of the chest and abdomen was made, with the patient in a prone position, although the upright positon would have been preferable as this would have shown the fluid level in the chest. The radiograph revealed a complete clouding of the right chest, extending from the apex of the lung to the under surface of the liver which was pushed downward. The heart was crowded to the left but the left chest was not involved. (Fig. A).

Upon first inspection of the radiograph, we were led to believe the condition was an empyema. The usual well defined shadow of the diaphragm

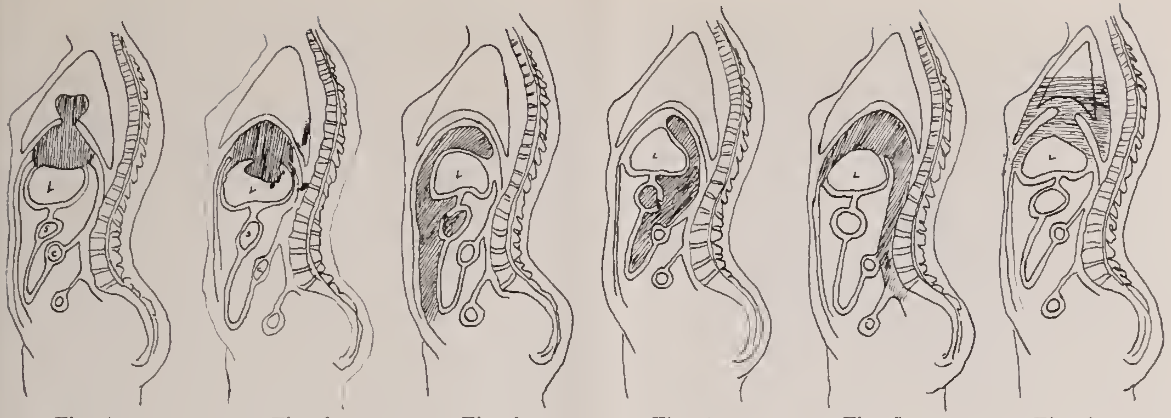


Fig. 1 Fig. 2 Fig. 3 Fig. 4 Fig. 5 Fig. 6

Subphrenic Abscess. Fig. 1. From lung abscess; Fig. 2. From liver abscess; Fig. 3. From perforation stomach, anterior wall; Fig. 4. From perforation stomach, posterior wall; Fig. 5. From perforated appendix; Fig. 6. From empyema; Fig. 7. From caries spine; Fig. 8. From abscess, kidney; Fig. 9. From perforation, colon.

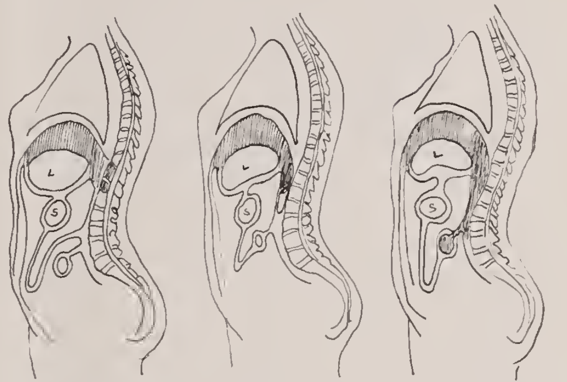


Fig. 7 Fig. 8 Fig. 9

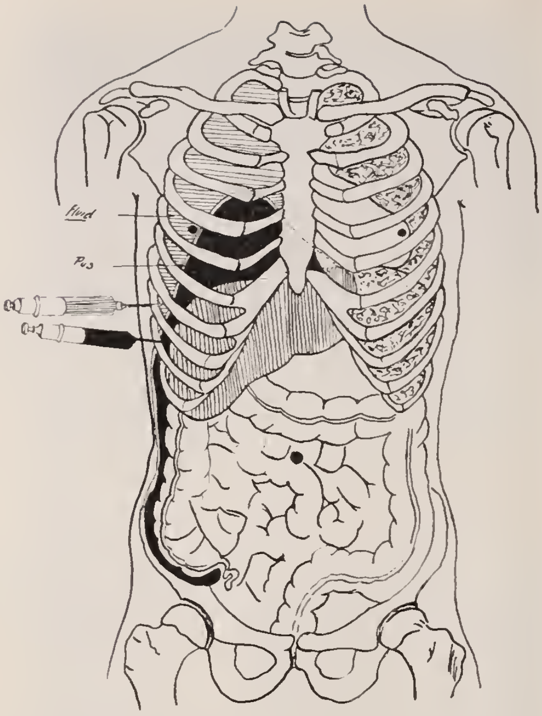
was not visible as would be present if there were only a subphrenic abscess. Fig. B shows a subphrenic abscess which is not complicated by a pleuritic effusion. Note the extremely elevated diaphragmatic curve on the right side and the normal curve on the left side.

After concluding that we had fluid in the pleural cavity, an aspirating needle was inserted into the seventh interspace in the midaxillary line on the right side and a considerable quantity of straw colored serum was withdrawn.

We expected to find pus in the pleural cavity, rather than the clear-colored serum, as the patient seemed septic and had a temperature of 103 deg. F., extremely rapid pulse, and respiration 46. The abdomen seemed to be negative. For this reason the aspirating needle was withdrawn and inserted into the eighth interspace in a search for pus. This time the needle was directed downward and deeper. We then found pus and our next supposition was that there was probably a walled off empyema or a subphrenic abscess, with a possibility of either a liver or lung abscess. The location, however, indicated that it was more likely a subphrenic abscess. It was definitely determined by aspiration that there were two separate cavities with which to deal, one containing a serum and the other pus. As the patient was greatly relieved by the withdrawal of about a quart of serum and pus, the opening of the chest was delayed until the following day.

Exploration of the chest was necessary in order to determine definitely the exact location of the two cavities. Under a light ether aneasthesia a portion of the seventh rib was resected in the the midaxillary line. The thoracic cavity was opened and a large amount of straw-colored serum escaped. The gloved finger was inserted through the opening. The diaphragm was found to be pushed upward, was very tense and immobile with respiration. It was evident that the abscess was beneath the diaphragm and a large aspirating needle was inserted and pus was withdrawn. A large opening was made in the diaphragm and a rubber drainage tube was inserted into the cavity. A great quantity of foul smelling pus and gas escaped. Palpation did not reveal a ruptured abscess of the liver or lung. A tube was placed in the pleural cavity to care for the infection which might follow drainage from th subphrenic abscess. The tubes were fastened to the skin with silkworm gut and the usual large dressing applied.

During drainage of the pleural cavity in a condition of this kind, progress is accompanied by a fluctuation of temperature, pulse and respiration, depending upon the method of drainage and type of infection. The same is true during the drainage of a subphrenic abscess which i usually due to a mixed colon bacillus type of i fection. A gradual decline to normal pulse, respiration and temperature was noted in thi patient, and his general condition improved, but



Pleural effusion associated with subphrenic abscess.

he experienced a long period of drainage and convalescence.

Considering very briefly the pathology, it was evident the case had been one of appendicitis which had been allowed to continue for several days when operation should have been performed. A case that is treated on the "expectant" plan often goes from bad to worse and, in this instance, the pus had burrowed to the outer side of the colon and retrocaecally upward into the subphrenic space. A subphrenic abscess may develop from perforation of the stomach or from a ruptured abscess of the liver or lungs. The infection may also travel through the lymphatics reaching the subphrenic space.

In summarizing we would say that when an extensive peritonitis has been present and is complicated by a chest condition, a subphrenic abscess may be suspected. Many times they are not discovered until post-mortem examination. Where one has a subphrenic abscess together with a pleural effusion on the same side, the subphrenic abscess may go undiscovered because of the misinterpretation of the radiograph. First aspirate, then open exploration is the most certain method of avoiding error. Drainage of the pleural cavity, or a subphrenic abscess, is usually followed by a long and tedious convalescence.

RENAL FUNCTION TESTS

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EDITORIAL NOTE: Dr. Rowntree has very kindly written the following by request. Having introduced the test, and having had an enormous experience with it, he may be regarded as the highest authority on renal function tests.

The phthalein test is as accurate an index of renal function in medical nephritis as any test now being used. In fact those responsible for the introduction of newer renal function tests, such as blood urea, creatinin and uric acid determinations, have compared the findings of these tests with those of the phthalein excretion and have in part based their claims as to the value of the methods on the fact that the findings of these tests parallel those of the phthalein tests.

A lack of parallelism is found under the following conditions:

(1) In acute nephritis the functional injury is shown earlier by the phthalein test, probably because it takes some time for the various substances to accumulate in the blood to the point where they become of significance from the standpoint of retention. Under these conditions we believe the phthalein test is a more accurate index of the renal function than any of the newer tests. The same statements hold true for experimentally induced nephritis and nephrosis.

(2) In obstruction of the urinary tract with retention of the urine in the bladder, ureter, and kidney pelvis, it can only give the true index when all the urine below the kidney is collected and taken into consideration in making a determination.

My attitude is as follows: The phthalein test being the most easily applied, should be done first. When the phthalein excretion is low, one or another of these tests or all may be utilized to advantage. In the Olmsted Hospital we do the phthalein test in all cases, along with the urea, creatinin and uric acid in the urine, and also blood determinations.

Some cases of chronic parenchymatous nephritis are characterized by normal permeability for phthalein, but in these same cases, as a rule, the kidney is equally permeable for these other substances. In cases of parenchymatous nephritis, all of the test may indicate normal permeability.

We have never advocated the intravenous use of phthalein in medical nephritis, although we utilize it ourselves. At the time we introduced the test, intravenous injections were not commonly practiced and we felt it wiser to stick to a method that was practicable. We compared the phthalein output at one-half hour intervals, following the injection into animals intravenously and intramuscularly, and noted that the output was much greater following the intravenous injection at the end of half an hour and at the end of one hour, but at the end of two hours it was practically equal. It is not possible to apply this always to disease, since the degree of involvement would be determinant in the rate of excretion. It is not at all uncommon to recover 30 per cent from intramuscular and 40 per cent in intravenous injection. Where the technique can be controlled the intravenous gives probably more accurate results than intramuscular, and 50 to 60 per cent should be recovered in two hours.

TREATMENT OF POSTOPERATIVE COMPLICATIONS

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The treatment of postoperative complications begins with diagnosis. A thorough knowledge of the pathology, a careful physical examination, with close study of laboratory findings, and preoperative care and preparation. There is no place in the field of medicine where the old maxim "an ounce of prevention is worth a pound of cure" is more applicable than in surgical procedures.

Postoperative complications may be separated into two groups; immediate and remote.

In the immediate group of complications we have: infection, embolism, shock, thrombosis, hemorrhage, surgical injury, ileus, acute dilatation of the stomach, incomplete and insufficient surgery, postoperative insanity, aspiration pneumonia, or so called ether pneumonia, ununited abdominal incision, fecal fistula, peritonitis, abortion, etc.

In the remote group we have: adhesions, late obstructions, recurrency, neuroma, hernia and fistula.

In the immediate group of complications we must admit that some are in a great measure preventable, such as: infection, hemorrhage, surgical injury, incomplete surgery, aspiration pneumonia, and, to a great extent, shock.

The limits of this paper do not permit me to go into all the complications above mentioned, only the most important will be dealt with.

In the foremost place we have infection. The sources of surgical infection are several, as infection from operating crew's mouth, nose and hands; patient's skin; soiling of surrounding tissue from infected organs; and catgut infection. I will first take up infection from the mouth and later catgut infection.

In a recent experiment at the Swedish Hospital by Dr. Nickson, our pathologist, as to the permeability of the ordinary gauze mouth pieces used by most hospitals (and at that time by us), he found the following:

Experiment 1. Plate of plain agar exposed on the table while a hundreds words were read aloud, twelve feet away, plate closed and incubated for twenty-four hours. Four colonies appeared, all saprophytes.

Experiment 2. Plate of plain agar exposed on table and a hundred words read aloud eighteen inches away without any mask whatever. Plate incubated for twenty-four hours. About one thousand colonies appeared, colon, staphlococci, streptococci, and many saprophytes present.

Experiment 3. Plain agar plate exposed eighteen inches away to one hundred words read aloud, reader wearing ordinary surgical gauze mask four layers thick. Between five to seven hundred colonies appeared after incubation.

Experiment 4. Same as before, reader wearing one layer of muslin. One hundred colonies appeared after incubation.

Experiment 6. Same as before, reader wearing mask of two layers of muslin with a piece of oiled silk slipped between. Four colonies appeared after incubation.

Experiment 7. Same as last experiment, two layers of muslin with one of silk between, except wearer sneezed with customary bowing of head during sneeze. Five colonies appeared after incubation.

Experiment 8. Same as experiment 5, two layers of muslin, except wearer sneezed with usual bowing of head. One hundred to one

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*Read at Surgical Section, King County Medical Society, June 19, 1922.

hundred twenty-five colonies appeared after incubation.

From these experiments it is evident that the gauze mask is little better then none, perhaps worse, as it gives the wearer a false sense of security. Two layers of muslin will hold back mouth and nose organisms provided wearer does not sneeze. Two layers of muslin, plus one of oiled silk, will hold back organisms under all conditions but this is extremely uncomfortable at all times, and men who wear glasses can not wear such a mask on account of the condensing of moisture on glasses.

It is remarkable that we have escaped infection in the past for thousands of abdominal operations have been performed where the operating crew, as well as the surgeon himself, wore only a couple of layers of surgical gauze. I have seen men cough, sneeze, talk incessantly, and laugh within only a few inches of the abdominal opening, with only two or possibly four layers of gauze covering the mouth and nose, and still no infection of wound or peritoneal cavity followed. And it is indeed difficult to say why infection did not follow, except that the patient was immunized against ordinary bacterial flora found in the mouth, nose and pharynx. In searching the records of the Swedish Hospital I have found that some surgeons would have a run of infection during the course of ten days to two weeks, then infections would cease and his wounds heal by first intention.

This experiment with different kinds of face masks, and the intermittent run of infections, would at least point to the possibility of the surgeon or his assistants having at some particular time more virulent bacteria present in the mouth and nose. One inference is also apparent that the average patient resists the usual bacteria found in the mouth, pharynx, and nasal cavity. The necessity then of efficient nose and mouth protection is evident, and we have now adopted a muslin mask made of two layers covering most of the lower part of the face. Another deduction follows: that at least the surgeon, who usually does the most talking, should have his tonsils removed and all forms of gum infection cleaned up.

The next form of infection that I will take up is catgut infection. This form of infection is not as common as is generally supposed. Manufacturers of catgut will admit that even under the best methods of preparation and sterilization some gut will carry spores. At the Swedish Hospital a piece of each strand of catgut used in the last 4,523 surgical cases has been placed in a sterile test-tube and sent to the laboratory for incubation. Out of 13,569 strands of catgut we have only found one strand infected by staphlococcus and colon bacillus. That patient also developed a staphlococcus abscess. In five strands out of this number we found streptothrix fungi, a harmless nonpathogenic organism, but indicating faulty sterilization and spore-producing bacteria, as Bacillus ærogenes capsulatus and Bacillus tetani could easily survive with this fungus. From these observations we have concluded that most of the supposed catgut infections were due to dragging the gut over the uncovered and sometimes unprepared skin surface.

The next complication to be taken up will be acute dilatation of the stomach, postoperative ileus and acute obstruction.

Gastro-intestinal paresis may vary a great deal in severity from mild gas pains to enormous distention with a completely paralyzed bowel and obstruction. The etiology is obscure and a great many unfounded theories have been advanced. Perhaps the discovery of the sympathetic nodes of the gastro-intestinal tract by Keith, who tells us that there are eight such anatomic nodes, of which four have been definitely located and four not fully identified, gives us the key to the cause. These nodes control the contraction and dilatation of the gastro-intestinal tract. Kieth admirably likens them to the block system on a railroad line. The first node is situated at the pharynx, after passing this point control is lost and automatic impulses occur throughout the esophagus to the cardiac opening, which is normally closed. Here the second node relaxes the contracted opening. The third node is situated at the termination of the common duct in the duodenum. Disturbances of this node induce what is known as pylorospasm and other gastric motor disturbances, including acute dilatation of the stomach. The fourth node is situated near the duodeno-jejunal junction and is concerned in the complex phenomonon of peristalsis of the small intestine and, abnormally, in producing gastromesenteric ileus. The fifth node is situated at about the ileo-cecal junction, the sixth node at about the middle of the transverse colon, the seventh node in the recto-sigmoid region and the last node is concerned with the rectal control.

When we add to this the knowledge of independent control of contraction in the non-striated muscle fiber, for a piece of the wall of the intestine when placed in Locke's solution and stimulated will contract for hours, we have something to base our judgment on in the treatment of postoperative disturbances of the motive functions of the gastro-intestinal tract.

The gastro-intestinal tract, being so completely controled by the sympathetic nervous system, is influenced by the central nervous system under unusual and extraordinary conditions, for example; fear and pain have distinct influence on the motivity of the gastro-intestinal tract, as well as on the heart and respiration. Also prolonged and deep anesthesia, and an injury of abdominal viscera by rough handling and unnecessary and prolonged exposure. Our preoperative treatment of these conditions should be to allay fear and anxiety, and not to disturb the intestinal tract with severe purgatives or unusual diet. An enema the evening before the operation, morphine to insure sleep, morphine and atropine one half hour before the operation, sometimes combined with hypodermic injections of magnesium sulphate solution, is a routine treatment with most surgeons. Time saving measures and gentle handling of the viscera during the operation are important preventive means.

The treatment of disturbances of the motivity of the intestinal tract following operation, when once established, depends upon what part of the gastro-intestinal tract is involved. The two conditions of greatest importance are acute dilatation of the stomach and intestinal paralysis, or so called paralytic ileus. The treatment of acute dilatation of the stomach is first, early diagnosis, as delay is frequently fatal. Lavage early and often pituitrin hypodermically or intravenously, and Fischer's solution should be administered by proctocylsis. Adrenalin is recommended by some authors.

In obstructive symptoms, which may appear within a few hours or a few days following laparotomy, an early diagnosis is of equal importance. The condition should be relieved by the third day as after that the situation becomes rapidly more serious every hour. If the obstruction is high up in the jejunum frequent gastric lavage markedly reduce toxemia and, if not relieved within three days, it should be treated by enterostomy. No effort should be made to separate adhesions at this time, as a rapid operation is indicated, preferably under local or gas and oxygen anesthesia. If the obstruction is in the ileum a drainage enterostomy should be done when the diagnosis is made. If the obstruction is high up rectal feedings should be instituted.

The next complication to be dealt with is surgical shock.

Crile's theory is that shock is a form of exhaustion due to excessive stimulation of the brain cells through the afferent nerves. This over stimulation may occur in several ways, such as; through fear, anxiety, prolonged exposure to cold, starvation, toxemia, over production of thyroid secretion, prolonged inhalation anesthesia, and trauma to parts operated on. The changes are identical with exhaustion. There is one think we know now—that there is acute acidosis present in every case of shock. Crile says that there is no drug ordinarily used as a stimulant that is of any use, and makes the statement that strychnine is conducive to shock and, in a large dose, will produce it.

An other theory, advanced by Cannon, is that some poison is formed by the traumatized tissue which is carried through the blood causing toxemia and shock. This theory is supported by the observations made during the late war. When a patient with a severe injury of the leg had a tourniquet applied there were no symptoms of shock but, after arrival at the hospital and removal of the tourniquet, symptoms of shock immediately appeared.

In shock there is less than the normal amount of blood in circulation. There is a stagnation of blood in the capillaries, and this stagnant blood is high in red corpuscles. There is a loss of hemoglobin, a diminution of the normal percent of carbon dioxide in the blood, and a relative increase of hydrogen ion content, or acidosis.

Pre-operative measures against shock should eliminate fatigue, worry and fear of the operation, prolonged anesthesia and draining of the fluids from the tissues by pre-operative purgatives, besides gentle handling of the anesthetized patient.

If shock follows the operation the patient must be kept warm, the foot of the bed elevated, and morphine given, if there is cyanosis or pain. Crile recommends administration of nitrous oxide and oxygen to relieve pain in the cyanotic. If the blood pressure remains below 90 systolic, a blood transfusion should be made, or 500 c.c. of gum saline solution given intravenously and large quantities of fluids should be given by mouth, and Fischer's solution by rectum.

As stated before, acidosis is present in every case of shock and we must bear this in mind. The careful examination of the patient may reveal a slight acidosis before operation. Such a patient should be put on large quantities of liquids by mouth, Fischer's solution by rectum, and a diet consisting largely of carbohydrates.

Severe cases of acidosis folowing operation should be given a four percent glucose solution intravenously, bicarbonate of soda solution with saline subcutaneously, alkaline medications per rectum and, if possible, by mouth.

If there is much nausea it is well to wash the stomach with a five percent solution of bicarbonate of soda, allowing a good quantity to remain. The large intestine should be emptied and washed until the fluid returns clear and one quart of soda solution be allowed to run in slowly. This should be repeated as indicated. Hypodermocylsis must also be thought of.

The next complication to be taken up is postoperative hemorrhage in obstructive jaundice. This form of oozing or hemorrhage depends upon decreased coagulability of the blood. Before the operation such a patient should be given large quantities of fluids and carbohydrates. At the operation great care is taken to prevent trauma of the liver, and to secure complete hemostasis, covering the raw surfaces with peritomeum if possible. Cholecystectomy should be postponed until after jaundice has subsided. At the Mayo Clinic about four days before operation this class of patients are given five to ten c.c. of a ten percent calcium chloride solution, with calcium lactate by mouth.

Injury of the common duct during cholecystectomy.

In certain forms of pathological gall-bladder it takes a great deal of pains and care to identify the cystic from the common duct. This is especially true in what is called an elbow gallbladder with a greatly thickened wall and dense adhesions. When this condition is encountered it is probably safest to dissect the gallbladder from above downward, as by this method you must arrive at the cystic duct. Dissecting the fatty deposit away from the cystic duct it should be easily recognized, clamped and tied. If the common duct is severed we have a serious condition to deal with. If this condition is not discovered at time of operation, but comes up for repair later, we have a much more difficult situation to deal with. As space does not permit me to give you a complete review of the different methods of repair, I will only refer to William J. Mayo's description of his method of performing hepaticoduodenostomy. The same incision as for cholecystectomy is made, dissecting down to the common duct from the upper end of the incision, thus avoiding former adhesions. The duodenum is located, usually surrounded by a mass of adhesions. The stump of the hepatic duct is more difficult to locate, usually a fistula exists and this will guide us. Careful dissection is made, care being taken not to injure the portal vein which usually bulges into the space. The duct usually lies flush with the liver. The duodenum is now drawn up to the stump with a few catgut sutures posteriorly. A slightly curved flap is dissected from the duodenum 2c.m. in diameter. This little flap is sutured to the posterior and lateral wall of the stump. The remaining free margin of the opening in the duodenum, which is larger than the duct, is now sutured to the capsule of the liver above the duct with continuous catgut suture. Now a wider area of the duodenum is drawn up to the liver and fixed with catgut suture. The edge of the omentum is split and fixed around the anastomosed area. A drain is seldom necessary.

In conclusion I will mention the management of accidental ligation of the ureter. It is best not to attempt to remove the ligature by opening the abdomen but instead to drain the kidney pelvis, thus preserving the kidney function. Later the catgut will dissolve and a ureteral catherer may be inserted and normal function may be established.

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EDITORIAL

THE NATURE OF FEVER

Oliver Wendell Holmes showed both his thirst for investigation and interest in fevers, as well as his sense of humor, when, beginning practice, he hung a card on his door reading, "*Small fevers gratefully received.*"

Fever is of vast scientific and practical interest and our conception of it has greatly altered with time. Early in this century the nervous theory held sway. Horatio C. Wood wrote—Fever in blood poisoning is due to "the action of poisons upon the nervous system, hence is a neurosis."

The existence of centers in the brain and cord for stimulation, inhibition and regulation of heat production and heat loss was then accepted, as now. It is a very pretty hyposthesis—these centers acting as does a thermostat regulating room temperature—and in health adjusting the balance between between heat production and loss so as to maintain the normal body temperature.

Soon it became evident that the etiologic poisons were proteids foreign to the body, and fever was described as a proteotoxicosis.

Foreign proteids introduced from without, or split proteids from within, were the febricants and the cause of all fevers. In traumatisms absorption of blood clot or injured cell proteids, in infections bacterial proteids, or split proteids from bacterial or cell destruction; in intestinal disorders absorption of putrefactive proteids through damaged mucous membrane; in nervous fevers disturbance of metabolism and the production of toxic proteid by-products.

In all fevers then the direct cause was thought to be increased metabolism and heat productions from poisoning by protein split-products.

Investigations during the last decade show that fevers occur in which the nervous centers have no part, as when the cervical cord is severed and foreign proteid is injected intravenously. Furthermore, increased production of heat has hitherto been considered the chief factor in fever. But, according to recent investigations, diminished heat loss is the cause of all fevers. Heat loss normally occurs through radiation of heat and evaporation of water from the skin, and vaporization of water in the breath.

Experiments of Balcar, Sansum and Woodyatt and others show that high fevers may be caused by intravenous injections of salt or sugar, owing to abstraction of water from the blood, with consequent diminished urinary output. With sufficient water supply the fever may be prevented or abated after the injection of glucose.

These and other investigators affirm that all fevers are directly caused by diminished heat loss through altered condition of the tissue cells; their colloid contents binding and holding water and not permitting it to escape into the blood and so cool the body by evaporation from the skin or vaporization from the breath. They bring forth all sorts of corroborative evidence, as the escape of large amounts of urine and sweat with the crisis of pneumonia, the existence of cloudy swelling of the tissues in fevers, and lastly clinical proof. It is affirmed that, following ingestion of as much as eight quarts of water in 24 hours, the fever of pneumonia has been dissipated within the same period, but clinical evidence is still insufficient for forming reliable conclusions.

It is possible that rapid abolition of fever, or flooding of the tissues with water may be actually harmful. Moreover in many clinical trials by the editor in which two gallons of water were given daily to patients with fever, and with fever caused by intravenous injection of typhoid vaccine, there was not the slightest fall of temperature. —K. W.

THE PRESENT CONCEPTION OF NEPHRITIS

To many of us, in our student days, chronic nephritis was represented as a constitutional disease, or one due to some inherent or inherited weakness of the general system. More and more are disorders of vague or unknown etiology proved to be of bacterial origin. It is probable that chronic nephritis is usually due to bacterial toxins, or to direct infection of the kidney itself. William J. Mayo, in his thoughtful paper on Hematogenous Infections of the Kidney has classified nephritis into three groups; Type 1, due to bacterial toxins (large, white kidney); Type 2, due to causes unknown (contracted, granular kidney); and Type 3, due to acute hematogenous infections usually associated with bacteria and pus in the urine, or in the kidney. He believes that the second type, or chronic interstitial nephritis, is not of bacterial origin but caused by disorder of metabolism. However, both acute and chronic interstitial changes in the kidneys occur from experimental infections. The small red kidney appears often to be secondary to arterial hypertension and, while its etiology is unknown, yet removal of focal infections is the most successful treatment for hypertension.

The established pathological classification of nephritis is based on end-results, as determined by autopsy, which probably represents the cumulative effects of repeated bacterial assaults extending over a course of years. In other words there is a sclerosis of parts, or the whole, of the renal tissue-capsular space, glomeruli or blood vessels.

The initial lesion in the kidney is usually acute and may end in perfect recovery, so there may be a series of acute or subacute attacks, with scarring and gradually loss of function and chronicity.

Le Count and Jackson injected rabbits with streptococci from infected human tonsils and found acute and sometimes chronic renal lesions in more than half the rabbits. Klotz, from the injection of streptococcus viridans into rabbits, demonstrated acute and sometimes chronic interstitial renal lesions in many cases. Crowe, Watkins and Rothholtz removed the tonsils from eighteen patients with chronic nephritis and sixteen improved or recovered. Fitz records fifteen cases of chronic nephritis with bad prognosis. Two or three years later eight of these had died and seven still living had had their tonsils removed and "are strikingly better" with one exception. These were not at all favorable cases. Experiments at Rochester show the frequency of nephritis following tooth infection, streptococci from both teeth and tonsils having an extraordinary selective affinity for kidney tissue.

Acute tonsillar infection has long been recognized as a cause of nephritis, and hematogenous infection of the kidney from abscessed teeth and infected tonsils is firmly established. It will have been observed by experienced clinicians that chronic nephritis is often a familial disease. Also the occurrence of tonsillitis in most or all members of certain families is not uncommonly observed. To go a step further, it has seemed to the writer that nephritis is more frequent in families subject to tonsillitis. In one such three members have developed nephritis of different types. The recognition of nephritis is often delayed for some years after the period of most frequent attacks of tonsillitis in childhood and early adult life.

The present conception of chronic nephritis is infinitely more hopeful than the former idea of an inherited and irrevocable tendency toward renal diseases. Even if there is a familial tendency toward it the etiologic factor of repeated infections may be removed. Just as in chronic endocarditis and arthritis our present conception is that the damage results usually from repeated bacterial onslaughts rather than from a single attack. It is extremely fortunate the body defences are so strong for, as Kidd has shown us in his extremely illuminating work on pyelitis, the kidneys normally are constantly eliminating bacteria in health and it is only owing to great numbers, or unusual virulence of the organisms, or pathology in the urinary tract, or lowered resistance of the individual, that renal inflammation ensues. With our present theory of the pathogenesis of nephritis the obvious preventive and curative treatment in early cases is the removal of focal infections wherever and whenever existing. —K. W.

AID FOR RUSSIAN PHYSICIANS

During the war, and the years which have followed, the medical profession of no country has suffered equally to that of Russia from the ravages of war, pestilence and famine. The physicians of that country have been reduced to a pitiable state of distress and poverty. Many of them have died from hunger and disease in their exertions to relieve their unhappy countrymen. Their efforts have been terribly handicapped thru the loss of medical and surgical equipment as the result of war, revolution and counter-revolution. At the present time many are dying in their attempts to check the ravages of typhus, cholera, dysentery and malignant malaria.

At this time an endeavor is being made to interest the people of American to furnish material for the treatment of disease in that afflicted country. An appeal is sent forth, especially to American physicians, to aid in supplying the ordinary equipment of the everyday practitioner which is almost totally lacking among the Russian physicians. A request is made for the donation of surgical instruments, laboratory equipment, medical books and journals. Dr. Lemashko, head of the Public Health Service in Russia, writes "I beg you to give us medical help. Send us drugs, food for our hospitals. Send us surgical and medical instruments and laboratory equipment."

The American Medical Aid for Russia has been established at 103 Park Avenue, New York City, supported and endorsed by some of the leading members of the profession of this country. It is undertaking to equip a five hundred bed American Hospital in Moscow. The King County Medical Society, of Seattle, has apointed a committee of which Dr. Louis Klemptner, Cobb Building, Seattle, is the chairman. An effort will be made to gather a supply of materials mentioned above and all physicians who can spare any of these articles are requested to send them in care of NORTHWEST MEDICINE, 108 Cobb Building, Seattle. When sufficient materials are assembled they will be forwarded to New York City. It is hoped that similar committees will be appointed in the larger cities of the Northwest to carry on this philanthropic endeavor. In addition to these materials it is desired to collect money to aid in this work. Since the members of our profession are persistently solicited for contributions to all sorts of charitable objects, it is not the purpose in this case to burden them by asking for large sums, but a request is made that each physician who reads this appeal will contribute the sum of one dollar for the relief of these needy fellow practitioners in Russia. Such contributions may be sent to Dr. Klemptner, from whom an acknowledgement will be received.

THE PACIFIC NORTHWEST MEDICAL ASSOCIATION

The meeting on July 6, at Spokane, was a success from the first moment when Dr. Henry Christian of Harvard mounted the platform shortly after 9.00 a.m.

Christian represents the very best professional type, morally, intellectually, and physically. His wonderful capacity for seizing upon and emphasizing the essentials of his subjects, his simple convincing style, his sane, sound, and sensible outlook—like that of Oxford Medicine, of which he is the *deus ex machina,*—all give one the feeling that here is the man to dissipate ephemeral fads and fancies and bring us down to the bed rock basis of scientific, rational medicine.

After apologizing for using notes because he wished to speak somewhat closely to the subject, which was to be printed, he promptly forgot all about them, and leaving his desk, stood before his audience, talking with perfect ease and distinctness, and with wonderful power of clinical description. He followed along the gradual progress of a number of patients with nephritis over a period of many years, not forgetting any point in their history, so that his audience of some five hundred listened, fascinated by every word.

A very rare and unusual combination is seen in Christian. A doctor of the highest scientific attainments, and an investigator, who at the same time is a sound clinician and thinker, and speaks readily and interestingly. He is a tall, very broad-shouldered Christian, of middle age, with quite bald head, but evidently of vigorous and robust health. Christian inspires admiration chiefly by his broad clinical outlook, based on enormous trained observation; as, waving aside with a gesture the fine distinctions of the pathologist in the blood picture of pernicious anemia, he showed that, when all is said and done, the clinical picture, and that alone, is the vital matter.

All of the leading speakers were notable for their size. Largeness of mind seemed to accompany amplitude of body; *mens sana in corpore magno,*—if a slight paraphase is permitted.

Doctors are often poor public speakers, and are usually at a disadvantage in using notes, which tends to monotony of voice. There is no need of notes if the subject is clearly in one's mind, and one is more apt to speak naturally and emphasize the essential points in the address, and omit superfluities.

The weather was hot, the doctors largely coatless, and lemonade was gratuitously dispensed at frequent intervals.

The discussions by the average able practitioners were really noble and martyr-like efforts, for it is a horrible ordeal to criticise, judge, or amplify the work of the highest in one's own profession. Devoting time after the lectures to questions is much more profitable to speaker and audience.

Dr. Joseph C. Bloodgood, of Johns Hopkins, is another big and vigorous figure as he stands with an air of wonderment, his fine, large, well-formed, bespectacled head, reminding one strongly of Thackery. He holds his body stiffly and erect with rigid, straight arms carried a little away from his trunk. His manner is very deliberate, mild and professional, but his statements are both extremely positive and convincing as befits a master of his art, the greatest living authority on cancer and bone tumors. More than any other has he educated the public to recognize precancerous lesions.

He again emphazised his well known maxim, that the experienced and able surgeon can more truly diagnose cancer from living pathology, than the pathologist himself, and he demonstrated the inestimable practical importance of this fact.

Another Harvard man, Dr. Walter B. Cannon, is undoubtedly a very big gun, as his name attests. A vigorous and original genius, this famous physiologist gave most stimulating and suggestive lectures on the relations of internal secretions of the thyroid and adrenals to the sympathetic nervous system, and on the nature of wound shock. He brought out the seasonal variations in thyroid secretion which, at its low ebb in the spring, results in hairless and still born progeny in certain animals in this region, and, in the fall at its maximum, apparently is responsible for the great growth in children in autumn.

Dr. Frank Billings, of Chicago, is a large, impressive man of senatorial type. He showed a number of patients with arthritis, somewhat lamely perhaps, but that is natural in speaking of cripples. He reviewed the etiology and general treatment of arthritis admirably. To him, and his former interne, Rosenow, is due the present epoch-making conception of focal infections and incidentally, the phenomenal prosperity of the nose and throat specialist and dentist, who should erect an enduring and colossal monument to their work.

Dr. Wallace I. Terry, of San Francisco, delivered a truly admirable discourse on the symptoms, treatment, and diagnosis of the various kinds of goitre. Indeed, so concise and complete was his summary of the salient points, that many remarked, after hearing international goitre celebrities in divers places, they had gotten more from Terry than any other. The power of imparting knowledge seems with some in inverse ratio to their learning. Not so Terry. But the marvel and sensation of the meeting was the revelation, one might call it, of Dr. E. C. Rosenow, of the Mayo Foundation. An unusual looking man of medium height and compact build, with swarthy complexion, rather high, broad cheek bones, prominent nose, and most luminous brown eyes, and a sad, slightly tremulous, low, voice,—he electrified his audience in the portrayal, by words, photographs and moving pictures, of his work in epidemic encephalitis, hiccup, spasmodic torticollis, and respiratory arrhythmias;—all due to a green-producing streptococcus. These respective diseases he reproduced in rabbits by intracerebral injections of cultures taken from the blood, secretions, lesions and focal infections in teeth and tonsils of specifically infected patients. The result in rabbits was the most marvelous mimicry of these human disorders in every detail.

In his lecture, first the moving picture of the patient was thrown on the screen, and then that of the rabbit inoculated with bacterial cultures from the patient. Every position, movement, and attitude of the human was imitated by the rabbits with such amazing and magical exactitude that the audience sat spell bound with occasional involuntary ejaculations of wonderment and surprise. The rigid coma of encephalitis, the extraordinary postures and movements of spasmodic torticollis, the astounding respiratory arrhythmias, were all there in the rabbit, each rabbit's appearance being an exact replica of the patient from whom it's infection was derived.

One almost fancied one could perceive close facial resemblance to the patient, spectacles and all, in the rabbit, so marvelous a counterpart was it. Whoever saw this exhibition could not fail of conversion to Rosenow's genius, if not to his conclusions. Those who have doubted in the past the deductions of Rosenow as to the affinity of germs for certain organs, once their homes, and their habit to attach only to these organs in animals when removed from various focal infection in patients, would have been the first to succumb to the revelation of the moving picture. They who came to scoff remained to marvel—if not to pray.

The lecture was a modern miracle in medical science. The effect on the brain of seeing living, moving, pathologic subjects was infinitely more impressive than a week of words. Rosenow was followed by his antithesis in manner and appearance.

The brisk, breezy, energetic business-like Dr. F. M. Pottenger, of Monrovia, California, began his address without an instant's loss, like the five-minute patriotic exhorter in the movie during the war. His plea was to the general practitioner for recognition of incipient phthisis, by means of careful clinical history taking and general survey of symptoms. One might, perhaps unfairly, call it early diagnosis without physical or x-ray examination of the chest. In other words, the purely clinical side was stressed. Dr. Ray W. Matson, of Portland, made a spirited reply, voicing the inherent diagnostic difficulties when every aid was used. Dr. William Engelbach, of St. Louis University Medical School, aroused tremendous interest in the clinical description of groups of endocrine patients. The prevailing sentiment was deep regret that he had not more time in which to amplify his topic. The meeting closed in an exacerbation of interest and fellowship with a grand band banquet, Dr. Christian being the *piece de resistance*. Unfortunately the writer is unable to furnish impressions of many other able speakers, as Hirchman, Dunn, Millwee, Adson and Butler, since he was not present at their lectures.

It would be wholly ungracious to close without expressing the appreciation, which all must have felt, of the unfailing cordiality and indefatigable energy on all occasions displayed by Drs. Epplen and Else, the prime organizers of this unique enterprise. Their motto was evidently *suaviter in modo, fortiter in re.* The meeting was a great and unqualified success, from start to finish. Returning by train the reporter heard from many that, of all the medical meetings they had attended in this state for the past two decades, this was the most interesting and profitable. Our friends from foreign shores were equally enthusiastic—the Canadians.

—K. W.

MONTANA STATE MEDICAL SOCIETY MEETING, JULY 12 and 13, GREAT FALLS, MONTANA

PROGRAM

1. Presidential Address by Dr. W. W. Andrus, Miles City, Montana.

2. Direct Laryngoscopy, Bronchoscopy, and Oesophagoscopy, by Dr. A. D. McCannel, Minot, N.D.

3. Some Pitfalls in the Roentgenologic Diagnosis of Gastrointestinal Disease, by Dr. R. D. Carman, Rochester, Minn.

4. The Cancer Problem of To-day, by Dr. Joseph C. Bloodgood, Baltimore, Md.

5. Diagnostic Neurological Problems in Children, by Dr. E. M. Hammes, St. Paul, Minn.

6. Hemorrhagic Disease of the Newborn, by Dr. F. C. Rodda, Minneapolis, Minn.

7. Some Everyday Problems in Obstetrics, by Dr. D. S. Hillis, Chicago, Ill.

8. A Rational Diet for Rational People, by Dr. J. H. Donovan, Butte, Montana.

9. North of the Collar Bone, by Dr. L. G. Dunlap, Anaconda, Montana.

10. Relapses in Pulmonary Tuberculosis, by Dr. James J. Waring, Denver, Colo.

11. The Treatment of Fractures, by Dr. Dean Lewis of Chicago, Ill.

12. Recent Advances in our Knowledge of Toxic Goitre, by Dr. J. E. Else, Portland, Ore.

13. The Thyroid Gland, by Dr. T. M. Joyce, Portland, Oregon.

14. A General Survey of Nephritis, by L. G. Rowntree, Rochester, Minn.

BOOK REVIEWS

Edited by Kenelm Winslow, M.D.

Diseases of the Digestive Organs. With Special Reference to Their Diagnosis and Treatment. By Charles D. Aaron, Sc.D., M.D., F.A.C.P., Professor of Gastroenterology and Dietetics in the Detroit College of Medicine and Surgery, Consulting Gastroenterologist to Harper Hospital. Third Edition, revised. Illustrated. Cloth 904 Pp. Lea and Febiger, Philadelphia and New York. 1921. $10.00.

This new edition of Aaron's well known work will be warmly received. A special chapter is devoted to examination of the duodenal contents. Lyons' work is endorsed, including his method of determining and differentiating bile from the common duct, bile from the gall bladder and bile from the hepatic duct. Numerous papers have shown that this is often fallacious since what has been supposed as bile from the gall bladder turns out to be from the liver, as proven by operation, since either the cystic duct is impervious, or the gall bladder altogether functionless.

The duodenal tube will undoubtedly prove of value in diagnosis in time, but it may be a very long time before its diagnostic status is determined.

When one thinks of the secondary value of the stomach tube compared with its standing some decade ago, when the x-ray put the gastroenterologist who did not possess a machine out of business, one realizes how inadequate the findings of the stomach tube were. However, the duodenal tube has undoubtedly some diagnostic value if one could evaluate it. The total absence of bile is said to favor mechanical obstruction of the common duct, other than stone, yet the reviewer, found complete absence of bile with the duodenal tube in stone in the common duct. The constant absence of one of the pancreatic ferments in the duodenal contents is probable indication of chronic pancreatitis.

The advantages of duodenal lavage in intestinal stasis, and in treatment, are described.

The examination of feces is too often neglected. It is probable that a routine examination should be made in every patient with digestive trouble, and in all cases where the diagnosis is obscure. There is a valuable chapter on examination of feces and the findings in various intestinal disorders. Chronic colitis is frequently confused with chronic appendicitis, or overlooked altogether.

Much space is given to treatment with mineral waters, in this country receiving but scant attention compared with European therapy in stomach and intestinal maladies. Among mouth diseases one of the most common, Vincent's disease, seems to be omitted. In leukoplakia caustics are advised but do more harm than good. Radium has proved more successful than any other curative agency and now should only be recommended, with abstention from tobacco and care of sharp or infected teeth.

There is an excellent chapter treating of gastroenteroptosis. The condition is usually associated with constitutional asthenia and neurasthenia, and the reviewer believes that usually little can be accomplished with home treatment, as the author emphasizes. One should, however, be particularly careful to rule out everything else for enteroptosis in itself is often symptomless. The book covers both diseases of the stomach and intestines and is one of the most valuable in diagnosis and treatment. We highly commend it.

—WINSLOW.

A Text-Book of Physiology: For Medical Students and Physicians. By William H. Howell, Ph.D., M.D., Professor of Physiology, Johns Hopkins University, Baltimore. Eighth Edition, thoroughly revised. Octavo of 1053 pp., 308 illustrations. W. B. Saunders Company, Philadelphia and London, 1921. Cloth. $6.50.

It is always a pleasure to welcome a new edition of Howell's Physiology, it being one of the few standard works on the subject.

Howell's takes a very conservative position in regard to many of the newer theories—even when they are quite generally accpted.

In the three years since the appearance of the last edition there have been no epoch-making discoveries in physiology but, as the author remarks, there has been a general shifting in the trend of opinion as our knowledge widens with the advances in co-related subjects. His description of the physiology of the internal secretions is particularly interesting at present. He does not discriminate altogether between the action of extracts given intravenously, as compared with ingestion, although not long since so high an authority as Cushing stated that it was extremely doubtful whether any of the endocrines had any action when given by the mouth, with the exception of thyroid preparations.

There is an interesting account of Steinach's experiments whereby castrated, young male animals were rendered wholly male in sex characteristics and sexual power by transplanting testes into unusual regions.

While, on the other hand, castrated young male rats, into which the rat ovary was transplanted, developed wholly feminine characteristics, with infantile male genital organs and the development of mammae and nipples, while they were sought by the male as though true females.

Howell affirms that the diuretic action of the extract of posterior pituitary lobe seems well established but admits that, in apparent hypo pituitarism, the action of the extract is to at once overcome diuresis. In view of the finding that removal of the posterior lobe by Cushing leads to diuresis, and that the experiments of Matzfelt with injection of posterior lobe always caused diminution of urinary flow, it would seem to the reviewer that the original affirmation by Schafer of the diuretic action of the posterior lobe should cease to be quoted in text-books.

Howell's work is one of the most admirable in the English language. —Winslow.

Tuberculosis in Infancy and Childhood. By J. Claxton Gittings, M.D., Professor of Pediatrics in the Graduate School of Medicine, University of Pennsylvania, and Frank Crozer Knowles, M.D., Professor of Dermatology, Jefferson Medical College ,and P. A. C. Ashhurst, M.D., Associate Professor of Surgery, University of Pennsylvania. 273 pages. Illustrated. J. B. Lippincott Co., Philadelphia and London. $5.00. The book is based upon a series of lectures delivered under auspices of the Philadelphia Pediatric Society. An adequate treatment of tuberculosis in infancy and childhood is presented. Opening with two general chapters discussing incidence, clinical bacteriological considerations and principles of diagnosis, the various types of tuberculosis encountered in infancy and childhood are presented. Details of methods in the use of tuberculin in diagnosis are given. Following in order are chapters on tuberculosis of the upper respiratory tract, of bronchial nodes and pleura, of the skin, of the abdominal cavity, of bones and joints, and miliary and generalized tuberculosis. Ghon's intensive study of autopsy material, with demonstration of the presence of a focus in the lung in hilus gland tuberculosis, is accorded full presentation. The collaboration, respectively, of a surgeon and dermatologist, for chapters on bone and joint tuberculosis and tuberculosis of the skin, lends additional authority to the work. The closing chapter on treatment gives details of methods and management in a comprehensive and practical manner. —Mohr.

1921 Collected Papers of the Mayo Clinic. Rochester, Minn. Octavo of 1318 pages. 392 illustrations. Philadelphia and London. W. B. Saunders Company, 1922. Cloth, $12 net.

The annual literary output of this clinic is condensed in a single volume of great value to those who wish to know what is the best in the surgical world. The present issue maintains the standard set some years ago and contains one hundred sixteen articles by seventy-six contributors. It would be futile to attempt to discriminate in excellence as each is most valuable in its own field. The alimentary tract continues to hold the greatest interest for the general surgeon and the papers published on gastric and duodenal surgery are characterized by freshness and completeness. Much work has been done on the ductless glands, blood, syphilis, and the nervous system. —Forbes.

Surgical and Mechanical Treatment of Peripheral Nerves. By Byron Stookey, A.M., M.D. Associate in Neurology, Columbia University, Assistant Surgeon, New York Neurological Institute, Assistant Professor of Neurosurgery, New York Post-Graduate Medical School and Hospital. With a chapter on Nerve Degeneration and Regeneration. By G. Carl Huber, M.D., Professor of Anatomy and Director of Anatomical Laboratories, University of Michigan. With 217 illustrations. 475 pp. W. B. Saunders Company, Philadelphia and London, 1922. $10.

This excellent work by a recognized authority takes its place automatically amongst the leading books on the subject with which it deals. Though much work has been done on the surgery of peripheral nerves, especially during the war period, there has been a lack of foundation laid in embryological, in anatomical, in physiological as well as in experimental work, and it is here that this book is particularly useful. Incorrect methods of nerve suture, are fully discussed and correct methods are described in detail. The cuts thourghout are most appropriate in illustrating the text. —Forbes.

The Principles of Bacteriology. By A. C. Abbott, M.D., Professor of Hygiene and Bacteriology, University of Pennsylvania. Tenth edition. 121 illustrations. Cloth, 686 pp. Lea and Febiger, Philadelphia, 1921. $4.00.

As in previous editions, the author has adapted this work to the needs of beginners.

The variations of bacterial species have been given particular attention as has the recent classification, pathogenicity and description of the spirochaetacea.

Newer methods of determining the exact reaction of culture media are very valuable additions to the older works. —West.

A Text Book of Practical Therapeutics. With especial reference to the application of remedial measures to disease and their employment upon a rational basis. By Hobart Amory Hare, M.D., LL.D., B.Sc. Professor of Therapeutics, Materia Medica and Diagnosis in Jefferson Medical College, etc. Eighteenth edition, enlarged, thoroughly revised, and largely rewritten. Cloth, 1038 pp. Lea and Febiger, Philadelphia, 1922. $6.50.

This book is unique in reaching its eighteenth edition in the life of its distinguished author. It is probably the most popular work in medicine and has been translated into various foreign languages, even into Chinese. It is in fact more of an institution than a book.

Many have criticized the work because it is not a complete scientific treatise on pharmacology but that it does not pretend to be. As its title declares it is, above all, practical. The physiological actions of drugs change in some respects almost with the seasons, according to the latest researches, but the practical, clinical uses of the standard drugs flow on forever. There is no other book one can grasp from one's desk, and in a moment find in it so easily and surely the latest application of any remedy. It is a convenient summary of the most recent methods of applying remedies to disease. As in former editions the useless old wood has been pruned away and newer grafts of therapeutic growth have been inserted into the original stem.

In speaking of the use of quinidine sulphate in auricular fibrillation the author states that: "It is unwise by its use to decrease the ventricular beats below 200." This is a printer's error, probably, and perhaps the author meant auricular instead of "ventricular." Hare affirms that quinidine should not be used unless its effect can be watched by the aid of the electrocardiograph. This seems unduly cautious if cases can be selected without evidences of decompensation or venous stasis.

The newer use and miraculous effect of pituitrin on diabetes insipidus are described but, as Hare points out, the influence of pituitrin in diminishing urinary flow is opposed to his statement that the posterior lobe acts as a diuretic. The explanation is that pituition is not a diuretic, as was demonstrated by Mazfeldt in 1916, and confirmed by Cushing in showing that polyuria results from removal of the posterior pituitary lobe.

There is no more reliable or convenient work of reference on Practical Therapeutics than that of Hare. —WINSLOW.

The Thyroid Gland. Clinics of George W. Crile and Associates. Edited by Amy F. Rowland. With 106 illustrations. W. B. Saunders Co., Philadelphia and London, 1922.

This is a cloth bound volume, containing one hundred and eighty pages. The print is of large size type on enamel paper, the latter adding a clearness to the one hundred and six illustrations.

It is stated in the introduction that it is the first of a series of clinical volumes, which is to present theoretical and practical view points of Crile and his associates.

Lacking detail of many case reports, it differs from the various clinics which are now being published.

It will appeal to the medical profession of the Northwest because of a general discussion of the present day knowledge of diseases of the Thyroid Gland.

Of special interest is a complete description of prevention of simple goiter and the general manageemnt of surgical goiter.

While the operative technique is fully described, it is refreshing to read of the careful preoperative measures, the use of Nitrous Oxide, oxygen analgesia, and postoperative care.

With such special attention to every detail, one cannot help but believe that such factors have been the real reason for bringing about the lowering of the mortality rate in thyroid surgery, which should compare favorably with that of any major surgical operation. —HUNT.

Radium Therapy. By Frank Edward Simpson, A.D., M.D., Professor of Dermatology, Chicago Policlinic; Adjunct Professor of Dermatology Northwestern University Medical School, etc. 391 pp., with 166 original engravings. Price, $7.00. C. V. Mosby, St. Louis, 1922.

This volume, though small, is crowded full of most valuable information for all who are interested in radium and its uses. It deals with a subject which is assuming more importance as its therapeutic possibilities are better understood. The author is a pioneer in this field and is capable of correctly interpreting the end results and he has incorporated these in this book which makes it the more valuable to the clinician. The several chapters devoted to the physics, emanations, and dosage are not only inteersting but illuminating. He does not set forth any hard and fast dosage rules but suggests the way for those employing radium and expects them to work out a technic for themselves. This is splendid for its creates initiative in the worker. He has boldly bridged the therapeutic gap between the use of radium salts and radium emanations for a certain type of lesion and shows a decided preference for the latter. The chapter devoted to constitutional symptoms which may supervene in the use of radium is not as full as it might be for it not infrequently happens that rather alarming cutaneous lesions manifest themselves during its use which may mislead the physician, unless he has gained the experience for himself, or had it brought to his attention by others. The engravings are well executed and are timely for they portray clinic cures which will tend to dispel some of the doubts which have been cast upon the results obtained by radium. For those who wish to pursue a scientific experimental course in radium and its properties the bibliography is both extensive and well selected. It is very readable, the author's style is clear and convincing. The work is not only well adapted to the use of the radiotherapist but is a splendid reference for all who are trying to solve the therapeutic problem of cancer and its allied distressing symptoms, and should appeal to all well posted physicians and surgeons. The publishers are to be congratulated upon the mechanical construction of the book, the rarity of errors in the text, the clearness of the print and the excellent paper, all of which tend to increase the pleasure of its perusal.

—JORDAN.

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Hay Fever and Asthma. Care, Prevention and treatment. By William Scheppegrell, A.M., M.D., President, American Hayfever Association; Ex-President, American Academy of Ophthalmology and Otolaryngology; Chief of Hayfever Clinic, Charity Hospital, New Orleans. Illustrated, 107 engravings, 1 colored plate. Cloth, 274 pp., 1922. Lea and Febriger, Philadelphia and New York. $2.75.

This is the most excellent treatise on the causation and treatment of hayfever, but has very little to say upon asthma, save so far as their causes are identical from pollen and animal exhalations.

The hayfever plants in various parts of the country are described and illustrated, and those common to the Pacific and Rocy Mountain States will be particularly interesting to physicians in this region.

An entire chapter is given to these. Golden Rod and roses are said to be harmless, despite popular ideas to the contrary.

The methods of preparing pollen for immunization are described in detail so that any medical man can prepare it. For treatment both pollen preparation and autogenous vaccine from the patient, or stock vaccines of M. Catarrhalis, penumococcus, Streptococcus pyogenes, and Staphylococcus aureus and albus, are used. Adenoids and tonsils are considered to be exciting causes of hayfever, and asthma in children.

The pollen of most plants will traverse five or more miles under favorable wind conditions, except that of corn which is very heavy. The book closes with a list of all the states from Alabama to Wyoming, and the common indigenous hayfever plants in them, with the seasons of pollination and therefore of incidence of hayfever. The part of Washington, west of the Cascades, is said to be comparatively free from hayfever, as is well known here, as physicians hereabouts have been driven away from lucrative practices east of the mountains on account of this disease. The work is the most authoritative and best manual we have on hayfever and can therefore be highly commended.

Winslow.

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NEW ADVERTISERS

The front cover again carries the advertisement of the Winkley Artificial Limb Company whose space was used last month to announce the Spokane meeting. The Tacoma Clinic (page 8) has reorganized its staff. The American Hospital of Chicago (page 9) announces a special course in operative surgery. Broemmel's Prescription Pharmacy of San Francisco (page 235) brings to your attention a new preparation for the treatment of Poison Oak Dermatitis. Mr. E. R. Braley (page 235) announces the removal of his drug store to 308 Union Street, opposite the post office. Messrs. B. W. Small and Son are the distributing agents for The Thompson-Plaster X-ray equipment. Attention is called to the newly reorganized Riverton Sanatorium, Seattle (page 23) for the treatment of tuberculosis and the Diagnostic Clinic of St. Vincent's Hospital of Portland (page 23).

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Vol. XXI. August, 1922 No. 8

ORIGINAL CONTRIBUTIONS

MYOMECTOMY FOR MYOMAS OF THE UTERUS

William J. Mayo, M.D.

ROCHESTER, MINN.

A restrospect of the various procedures recommended and practiced for the relief of non-striated muscle tumors of the uterus, myomas or fibromyomas, shows a steady progression from inefficient and blind methods to the present perfected technic which renders the treatment of such tumors one of the best understood and safest procedures of modern surgery. This retrospect teaches valuable lessons and shows that procedures obsolete or almost forgotten are still applicable in small but selected groups of cases and are fundamental to our knowledge of the subject.

The menstrual cycle, aside from the function in reproduction, has a marked effect on the female during the period between puberty and menopause. All surgeons have seen the shrinkage of the uterus and shortening of the vagina accompanied by trophic changes which follow ovariectomy. The nervous and psychic changes of the normal menopause are aggravated in young women by operations which check the menstrual flow. The effect on the patient is essentially the same whether menstruation is stopped by removing the ovaries and leaving the uterus, or removing the uterus and leaving the ovaries. It is probable that menstruation itself has some important endocrine function. Conservation of the reproductive function is of first importance, but conservation of the ovary for the continuance of its internal secretion and its effect on the production of menstruation is second only to the generative function. Even if reproduction is impossible, conservation of the ovary or some portion of it for the sole purpose of continuing menstruation is of the greatest importance. The estimation of the success of an operation from the patient's standpoint may turn on whether or not the menstrual function is to be lost.

The reproductive and menstrual functions are sacrificed not only by removal of the ovaries but also by radical operations on the uterus, especially for myomas. The incidence of myomas has been variously computed; it probably averages about 12 per cent for middle-aged white women, and 30 per cent for middle-aged colored women. Treatment of any kind is, of course, not indicated in this large percentage of women, since the presence of myomas does not of itself necessitate operation; every surgeon has observed many women with multinodular myomatous uteri who have no symptoms and bear children without trouble. This fact is of importance, since some of the methods of treatment advocated for uterine myomas, such as ergot and electricity in the olden time, and radium and roentgen-ray in our day, because of their nonoperative character, are assumed to be harmless and have been harmfully applied in many cases in which no treatment was required. Statements with regard to the value of these methods must ever be construed with the facts in mind.

The common indications for the treatment of uterine myomas are hemorrhage, pressure, signs of malignancy and the size of the growth, the form of treatment being determined in a given case by the particular indication present. The technic of hysterectomy has been thoroly organized and perfected until there is a tendency to perform the operation so readily that many patients are deprived not only of the right to motherhood, but also of the function of menstruation, which is so important to the endocrine system.

Too often the decision to operate in cases of tumor of the uterus is based on the possibility of malignant degeneration. In the Mayo Clinic such degenerations are found in less than 4 per cent, and in the majority a prudent diagnostician could have made a diagnosis of probable malignancy in time for a curative operation. Hysterectomy is seldom necessary for benign myoma in a woman under thirty-five years, and demands an excellent reason in a woman under thirty. After the age of forty-five hysterectomy is probably the best procedure. Sutton has shown that in 10 per cent of women, who require hysterectomy for fibromyomas after the age of fifty, there is coincident malignant disease.

It has been argued against myomectomy that it is a more dangerous operation than hysterectomy, but the mortality in our series of 909 cases with seven deaths (January 1, 1891, to November 1, 1921) was a trifle under 1 per cent (0.7). In cases of abdominal myomectomy the mortality was 0.5 per cent. Vaginal myomectomy gave a death rate of 2.7 per cent on account of the infection present. Every patient dying in the hospital, irrespective of the cause of death or the length of time following operation, is counted as dying from operation. Five hundred and four of our patients who had had myomectomies were traced; in these cases twenty-four women had each had one child, seven had had two or more children, and fifteen were pregnant at the time the investigation was made, forty-three living children; considering that only 75 per cent of the patients were married, this is most encouraging. Twenty-three married women who were sterile before the operation had one or more children after operation.

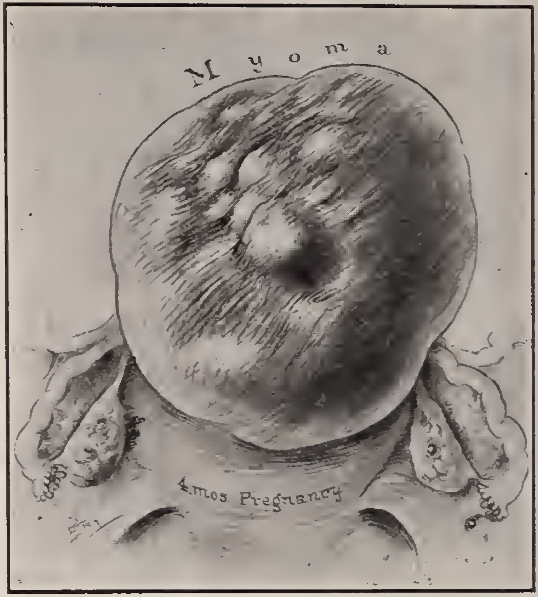

Fig. 1. Degenerating myoma of the posterior wall of a four months pregnant uterus.

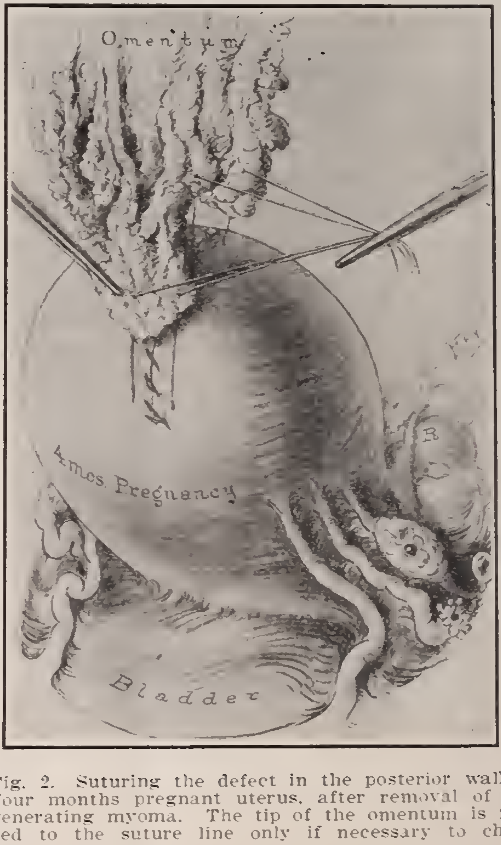

Fig. 2. Suturing the defect in the posterior wall of a four months pregnant uterus, after removal of the degenerating myoma. The tip of the omentum is fastened to the suture line only if necessary to check oozing.

Twenty-three pregnant women were subjected to myomectomy because of acute degenerative changes in myomatous tumors (figs. 1 and 2) and all lived. Sixteen of the pregnancies were intrauterine. Eleven of the patients went to term and bore living children; two miscarried within a week after operation, but in each miscarriage was imminent at the time of operation; three showed signs of impending miscarriage previous to operation which subsided after the removal of the tumors. Seven women had extrauterine pregnancies at the time the myomectomy was performed; in all of these patients the tube had ruptured with death of the fetus. The myomectomies and the operations for the extrauterine pregnancies were performed at the same time in these seven cases; it seemed possible that the presence of the tumors was responsible for the ectopic pregnancies. One of the patients has since borne a child.

The statement has been made that often myomas develop after myomectomy. Only 2.56 per cent required secondary operations; in more than half of these the second operation was performed five or more years after the myomectomy, and in one thirteen years afterward. More than half the secondary operations were performed for inflammatory disease and in no case was a malignant condition found. In the cases in which the second operation was performed for recurrence of the myomas the use of radium would probably be considered now. In none of the cases reported were the recurring tumors large, because the patients, knowing their former condition, were on the alert. Hysterectomy was usually performed at the second operation, but the patient had been carried along by the myomectomy to an age in which a radical operation is of less consequence.

It is impossible, in many cases of myomatous disease, to save a uterus capable of bearing a child, but in suitable cases one ovary and enough of the endometrium can be saved to continue the menstrual function. I have removed all of one wall of the uterus and one ovary and tube, and made plastic restoration, which was followed by the normal continuance of menstruation for years.

In a previous article I described the removal, by myomectomy, in a young woman, of a large tumor which had grown intra-abdominally from the cervix. In removing the tumor the fundus of the uterus was completely separated from the cervix and vagina, but anastomosis of the uterus to the cervix with catgut sutures gave perfect results (fig. 3). I have had one other such case. When myomectomy is performed in cases in which there have been severe hemorrhages the endometrium should be opened, inspected and thoroly curetted under the eye. In my earlier cases I did this with some misgivings, fearing the uterine wound, but no such infection has occurred. The endometrium covering a submucous myoma is atrophic. Carcinoma begins in the hypertrophic mucosa in the vicinity of the tumor, and the carcinoma liability of the endometrium of the body of the uterus is greatly increased by myomas; opening the uterine cavity during myomectomy in all cases suspicious of carcinoma eliminates the possibility of leaving a carcinomatous uterus. In 1919, in an examination of 4,000 specimens of myomas of the uterus in the surgical museum of the Mayo Clinic, Evans found seventy-two malignant and related nonepithelial tumors of the uterus, thirteen definitely and eleven potentially sarcomatous, and forty-eight cellular tumors with malignant possibilities. He showed that by counting the mitotic figures in the cell nuclei the chances of cure could be predicted; the giant cells are probably a defense and not a malignancy. The sarcomatous growths may be mutiple, they are yellowish rather than

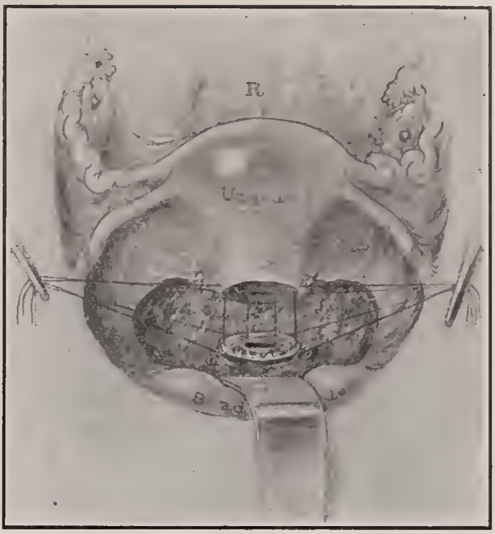

Fig. 3. Reunion of the cervix to the body of the uterus by catgut sutures after the removal of the huge myoma growing from the cervix at the internal os.

glistening white, and on section are softer than myomas and do not enucleate readily. The careful surgeon seldom makes the mistake at the operating table of believing them to be myomas and attempting myomectomy. If he does perform the operation, the microscopic examination of the frozen section will demonstrate the error before the operation is completed.

When hysterectomy is necessary, I believe that total hysterectomy for uterine myoma is a wise procedure, if it can be performed without increased risk, and usually it can. Leaving the cervix leaves an average cancer liability. We have seen sixteen cases of cancer occur in the left-over cervix, more than five years after supravaginal hysterectomy. To remove a cone of mucous membrane of the cervical canal from above, or to plunge the cautery thru the cervical canal to destroy it, is not sufficient. Peterson has shown that only one-third of the cancers of the cervix begin in the cervical canal (adenocarcinoma). Two-thirds of the cervical cancers are epitheliomas originating in the vaginal part of the cervix. The patient seldom complains of local trouble following total hysterectomy but, if the cervix is left, a foul irritating leucorrhea may result from degenerative changes in its mucous glands. Shrinkage of the vagina appears to be greater after subtotal than after total hysterectomy. Apparently nature, in the effort to shrink the cervix following supravaginal hysterectomy, is stimulated so greatly that shrinkage of the vagina is also increased.

Radium must justly be considered, in selected cases, as a competitor of hysterectomy, but it has no competitive standing in cases suitable for myomectomy. When bleeding necessitates interference in the menopause period, radium has a remarkable field of usefulness, but a sharp distinction must be made between nonoperation and conservation. There has been a tendency to assume that any method of treatment which is not operative is conservative, but the most superficial reflection shows that this is not the fact, for radium may be even more destructive than hysterectomy. In 50 per cent of hysterectomies one ovary, and in 25 per cent both ovaries, can be saved. Radium used for the purpose of destroying the myomas creates a condition of pathologic hysterectomy, an incomplete destruction of the uterus, ovaries and tubes, which leaves nonfunctioning remnants in the patient's body to await an uncertain future. Many patients with small to moderate sized symptomless myomas are now having radium treatment; such patients require no treatment but should be under the observation of their physicians. While menstruation usually returns within a few months after the careful use of radium, it may fail to reappear, even after the use of a moderate amount of radium.

The Mayo Clinic has more than 200 milligrams of radium in use, and its roentgen-ray department is well organized for therapeutic work. Our experience with radium and roentgen-ray has been wide, and we have no prejudices. Roentgen-ray treatment for myomas is capable of producing results somewhat similar to those of radium, but it is less easily controlled and its effects are less direct and certain; the ovaries more than the uterine musculature are affected; with greater possibilities of harmful effect on the intestines and other abdominal viscera by the roentgen-ray. If the patient is approaching the menopause, especially if hemorrhage is the chief indication for treatment, radium gives results so sure and so safe that it has no competitor and its use is indicated in patients whose general condition renders operation more than ordinarily hazardous, such as those with obesity and diabetes. If the patient is near the menopause, and has large tumors, especially if there is associated coincident disease of the ovaries or a suspicion of malignancy, hysterectomy is indicated.

This brief retrospect of the facts which have developed with the growth of our knowledge of myomas of the uterus is sufficient to demonstrate the dignified and unassailable position of myomectomy during the reproductive life of a woman.

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MYXOMATOUS DEGENERATION OF MYOFIBROMA OF UTERUS*

Paul Rockey, M.D., F.A.C.S.

PORTLAND, ORE.

Attention is invited to a report of this case, because of its clinical and pathologic interest, and because of its bearing on the subject of uterine myofibromata.

Miss ——. (No. R. B. 8076, Good Samaritan Hospital No. 9994, University of Oregon Pathology No. 7136) was seen at our office, in October, 1921. Aged fifty-five, single white, born in Ireland, thirty-seven years in the United States.

Family history: Mother and father born in Ireland; history negative and good, no tumors. Six brothers and sisters; history negative and good, no tumors.

Past history: Patient was seventh child. She says she was well until about the age of seventeen, when her periods began. She then began to have headaches, sometimes with her periods, and sometimes at other times. These headaches occurred off and on until the conclusion of the menopause, in March, 1920. Her second period occurred about six months after the first one. Her periods were then approximately regular until about the age of forty-five, except that every year or so her period would be a month or two late. During these years her periods were not profuse, nor protracted, nor accompanied by pelvic pain. Very seldom, after unusual physical exertion, she had a little clear mucous vaginal discharge.

From the age of forty-five to fifty-four her periods increased in frequency and duration, but not particularly in the amount of blood nor pelvic pain; nor did she experience any increase in intermenstrual discharge. From the time her periods began until they finally ceased, one and a half years ago, she often had headaches at and between periods. With these headaches she frequently suffered nausea and vomiting. She was always sensitive and nervous. Mental disturbance, unusual sights, sounds and odors, riding on a boat, and even on the cars, at times, caused nausea. These symptoms are much less since the conclusion of the menopause. There has always been a tendency to chronic constipation. No severe illnesses.

Sixteen years ago she sustained a severe blow on the lower abdomen, to which she attributed the subsequent development of the tumor. Nine years ago she began to notice a small, firm tumor in the mid-lower abdomen, that gradually increased in size until five years ago, since when its size seemed constant. This caused no pain nor other symptoms of which she complained, except a feeling of size and weight. It was for the presence of the mass, and the feeling of weight that the patient sought relief. Her average weight had been one hundred thirty pounds. She had been gaining weight for the past six months, and when seen weighed one hundred and thirty-three pounds. She had never been anemic. She had never noticed circulatory insufficiency.

General physical examination practically negative, except as noted. Patient of medium slender build, and average development and color. Heart and lungs negative. Pupils reacted normally. Urine negative. Abdominal examination negative, except for a massive tumor extending from the pelvis almost to the costal arch, and appearing to be about the size of an adult's head. It was hard and somewhat irregular, and in places had an elastic feeling. Vaginal examination showed the hymen intact, just admitting one finger. Cervix normal. Body of uterus apparently connected with mass above, but evidently in pedicle fashion, as the main part of the mass lay so high. Clinical diagnosis: fibroid of uterus. Recommendation: supracervical hysterectomy.

Patient entered The Good Samaritan Hospital, was prepared for operation, and operated on as planned. Anteoperative diagnosis: fibroma uteri. Postoperative diagnosis: same. Under general anesthesia median incision from symphysis to two inches above umbilicus, deepened into abdominal cavity, revealed a large and somewhat irregular, uterine tumor, about the size of an adult head. In its uterine extremity this tumor was partly soft and partly hard, and mostly very vascular, but in its upper part it had a cystic, avascular appearance. Ovaries and tubes normal. The appendix was negative, and was not removed. Gallbladder negative. A supravaginal hysterectomy was performed, leaving both tubes and ovaries. The wound was closed by layers.

The patient's postoperative course was satisfactory and uneventful. Healing of the abdominal wound was by first intention. She was discharged from the hospital to report to the office.

She was examined at the office nine days later. Postoperative examination satisfactory, directed to return. She returned to the office in two weeks. She said that she was feeling well, and had been feeling better than usual for the past week. Examination negative and satisfactory, except that on vaginal examination there was protruding from the cervix a polyp, about three-sixteenths of an inch thick, and extending about three-eighths of an inch beyond the cervical canal. As presently appeared, it seemed to extend from a point about three-fourths of an inch up the cervical canal on its left posterior aspect. This was removed with a hemostat, and the canal wiped with tincture of iodine. Whether the cervical polyp was protruding from the cervix before or not is, of course, unknown. The patient returned a week later; condition generally and locally satisfactory.

Dr. Frank R. Menne, Professor of Pathology, University of Oregon Medical School, and Attending Pathologist to The Good Samaritan Hospital, kindly examined the specimens, and reported on them. His reports follow:

Gross description: The uterus is for the most part obliterated by, and continuous with multiple tumors that bear evidence of varying stages of degeneration. The entire mass weighs 2250 grams. (The normal weight of the uterus is 75 to 100 grams). The various dimensions are 20 to 30 cm. Only a small portion of the entire structure resembles the normal uterine musculature (fig. 1). The uterine cavity appears to be entirely obliterated. A small portion of the mucosa is noted. Immediately above the uterine tissue there is a nodular, somewhat cryptic mucoid myofibroma, that appears to have been of submucous origin. At the original site of the fundus, dense, greyish-white, sworling bands of fibrous connective tissue are noted. The entire mass is neoplastic in character with only a small number of muscle fibers in the design. External to this zone, which is approximately 11 cm. in width, there is an area exhibiting cystic degeneration of a mucoid character. In certain of the

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* Read at the meeting of the North Pacific Surgical Association, Vancouver, B.C., December 10, 1921.

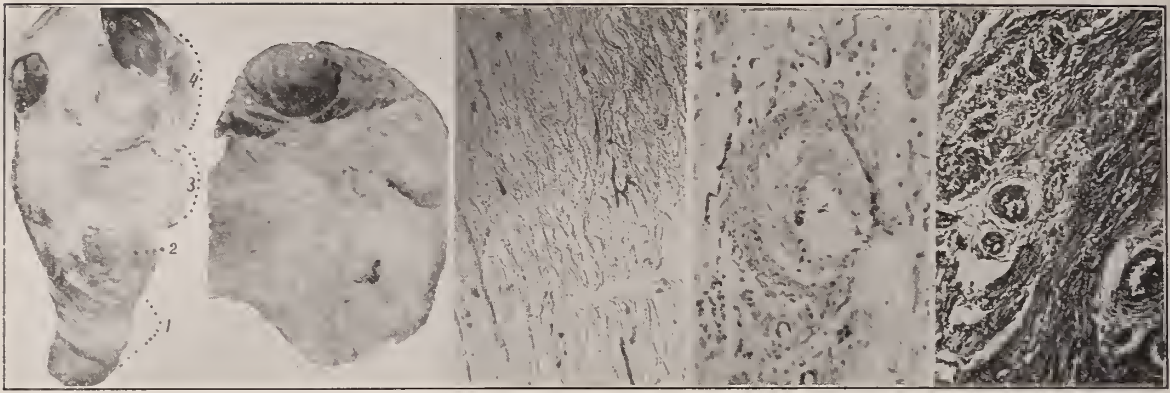

Fig. 1 Fig. 2 Fig. 3 Fig. 4 Fig. 5

Fig. 1. Section of uterus and tumor: (1) Remaining uterine tissue. (2) Submucous fibromyoma. (3) Area of dense fibromyomatous involvement. (4) Area exhibiting mucoid and cystic degeneration. Fig. 2. Section of larger area of cystic and mucoid degeneration. Fig. 3. Myxoblastic area in degenerating portion of tumor. Interlacing mucinous fibroglia are noted. The nuclear content is scant in comparison with the fibroglia. Fig. 4. Portion of tumor showing persistence of tissue elements about blood vessels. Fig. 5. Musculature of uterus, illustrating shrinkage of muscle bundles, vacuolization and new connective tissue formation about thickened blood vessels.

larger cysts (the size of an orange), hemorrhage and blood pigment are seen. Some of the cysts contain a fine reticulum of connective tissue that includes a somewhat bluish and mucoid watery fluid (fig 2). This area of mucoid degeneration has a maximum diameter of 16 cm. The peritoneal covering of the portion just described is greatly thickened, and includes diffuse yellowish plaques of lime deposits.

Microscopic examination: Sections made from a number of different areas of the portion of the tumor exhibiting mucoid degeneration reveal varying degrees of replacement of the usual structure by a fine reticulum of new connective tissue cells of a myxomatous character. These cells have the usual stellate appearance, with interlacing mucinous fibroglia (fig 3). There are found persisting, relatively isolated, strands of smooth muscle and older hyalin fibrous connective tissue. Near the periphery the latter are cicatricial, and reveal purplish islands of calcification. The atrophic muscle bundles, referred to above, appear to be most numerous near the blood vessels (fig. 4). Blood pigment changes are noted. Certain of the blood vessels appear to be filled with greenish hematodin-like blood cells. Sections of the remaining myometrium show a narrowing and generalized atrophy with vacuolization around the blood vessels (fig. 5). The mucosa is moderately atrophic and hemorrhagic.

Pathologic diagnosis: Multiple diffuse fibromyomata of the uterus with extensive mucoid, hemorrhagic and calcareous degeneration.

Report on Polyp:

Microscopic examination: Microscopic sections of the submucous polyp disclose a rather dense fibrous connective tissue structure that includes a number of Nabothian follicles greatly dilated and having a mucoid content. There is no suggestion of malignant hyperplasia. The polyp is obviously of cervical origin and part of the diffuse tumor formation found in the uterus after the removal. The polypoid growths represent tumor nodules that have grown into the cavity because of their nearness to the mucosa and their tendency to grow in the line of least resistance.

We do not suppose that the blow sustained on the lower abdomen caused the tumor. This was of rather rapid growth, then about stationary in size. The tumor was found to be nonadherent, as most fibroids are.

It seems to me that the tumor caused practically no symptoms, except by its size and weight. It did not give rise to excessive uterine bleeding; the patient was not anemic, either on that account or because of the hemolytic action often caused by fibroids. Probably these toxic and hemolytic actions are due to the fibroids, and not to their degenerations. The patient had complained of no circulatory weakness. Presumably the headaches and sensitiveness, in so far as they had to do with pelvic conditions, were caused by ovarian and uterine function, rather than by fibroids or their degenerations.

Except for malignant change, secondary infection, and gross strangulation, the specimen shows almost all of the degenerative changes to which fibroids are subject, including the so-called red degeneration.

It is interesting to consider what would be the fate of such a tumor without operation. Supposing that it caused no hemolytic or other toxic symptoms, nor local pressure symptoms, but only the signs and symptoms of its size and weight; and that malignant change, gross strangulation or secondary infection never occured. It could have increased or decreased in size, and become more myxomatous, and probably later cystic, fibrous and calcareous.

The indication for operation in this case was the size, weight and the anteoperative uncertainty as to the nature of the mass, and its future possibilities. The indication for the type of operation was surely for supracervical hysterectomy, as the patient was nulliparous. In our judgment supracervical hysterectomy without appendages is indicated for fibroids in all cases, where additional pathology does not indicate additional operation.

In our experience myxomatous degeneration of fibromyomata is uncommon. The specimen in this case is a good example, grossly and microscopically, as is the case from the clinical and operative surgery points of view.

X-RAY VERSUS SURGERY IN THE TREATMENT OF FIBROID TUMORS OF THE UTERUS

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Fibroid tumors of the uterus make themselves manifest in most cases in the early thirties, as a rule grow slowly, cause prolongation of the menstrual life and go thro senile involution along with the generative organs. They are more frequent than is usually supposed. Statistics from some of the largest gynecologic clinics show from 5 to 25 per cent of women past thirty-five years of age affected with some form or other of fibroid tumor of the uterus. That not a few women go thru life with fibroid tumors without any symptoms is proved on the postmortem table. Nevertheless, in most cases they produce symptoms of such severe nature that those affected will sooner or later have to consult the physician.

Of the three types, submucous, subserous and intramural, the first is the most frequent, causes excessive menstrual bleeding, in the later stages the hemorrhage continuing in the intermenstrual period. The excessive amount of blood lost regularly soon leads to anemia with all its severe consequences. The subserous tumors grow more rapidly, frequently producing pain thru pressure symptoms on the neighboring organs or thru stretching of the peritoneal covering of the uterus. If pedunculated, the tumor will not infrequently twist on its pedicle and later necrose. The intramural tumors usually grow slowly on account of poor blood supply and, as stated before, the woman sometimes never knowing of their existence.

With the development of a better surgical technic, the treatment of choice was of course surgical, i.e., if possible, enucleation of the tumor or hysterectomy. The results were in most cases very good, on the whole fairly satisfactory, mortality if operated on thru abdominal route an average of 3.5 per cent, vaginal 2 per cent. It seemed like a closed chapter until recently, when to the astonishment of the surgeon, the roentgenologist began to claim very good results in the treatment of uterine fibroids. The results of the latter were so good that the application of x-ray is now in general use in all gynecologic clinics in Europe. In a few hardly any cases are now treated surgically.

It may be worth mentioning that the percentage of cases of uterine fibroids requiring treatment varies greatly in different clinics, running from 25 to 90 per cent. The radical treatment, whether x-ray or surgery, is not indicated except when symptoms are very severe. A large number of cases with mild symptoms past the age of forty have been carried along successfully until menopause has set in, by applying conservative treatment. As usual, one sees enthusiasts who claim that postively every case should be treated with x-ray. The late Professor Kroenig, of the Freiburg Clinic, once made a statement that within a few years it will be considered criminal to treat uterine myoma surgically. This statement was of course ridiculous. However, in looking over the literature one can notice that from year to year the counterindications to the use of x-ray are rapidly diminishing. It is now left to continue working out a better x-ray technic and to further study its counterindications.

With an x-ray dosage of one-third sufficient to bring on a hyperemia of the skin, the ovary shrinks in size to one-half and a section under the microscope shows a degeneration of the follicles. Since it is the intention of the roentgenologist to bring about permanent amenorrhea, if the dosage applied is too small, it will only have the opposite effect of stimulating the function of the ovary, causing even more bleeding than before and bring his method of treatment in disrepute. The x-ray dosage of sterilization being only about one-sixth of the amount necessary to destroy muscular tissue, it can be readily understood that all the changes brought about in the uterus and tumor are indirect only, the same as after a surgical castration. Hegar, as far back as the year 1876, proved that a fibroid tumor of the uterus would shrink or entirely disappear after such operation.

The blood-building organs of the body are very sensitive to the x-ray. The lymphoblasts and pulp cells of the spleen and myeloblasts and erythroblasts of the bone-marrow are very easily damaged. In the blood proper, the lymphocytes react the strongest, causing a temporary leucopenia, while the red blood corpuscles react the least. This is important for the clinician to know in deciding upon the form of treatment to adopt in a woman already very anemic thru hemorrhage due to the tumor. In carrying out the technic of sterilization in these cases, one must keep in mind to give the proper protection to the bowels, since the intestinal villi, Lieberkuehn glands and lymph follicles are very susceptible to the x-ray.

With amenorrhea accomplished, the worst and most dangerous symptom, hemorrhage, disappears, the tumor with the uterus, as mentioned above, shrinking in size or disappearing entirely after the artifical menopause is established. As to the climacteric symptoms, they are not different from those in normal physiologic menopause and in most cases milder than when surgical castration is performed.

At first x-ray was used only where operative procedure was counterindicated, but since the improvement of its technic, in a great many clinics surgery is now applied only when the x-ray is counterindicated. The chief counterindications to surgery are nephritis, diabetes, certain neuroses and psychoses, myocarditis, the so-called myoma heart, pulmonary tuberculosis, arteriosclerosis, chlorosis and uterine hemorrhages of syphilitic origin. In exophthalmic goiter x-ray is also dangerous, the symptoms becoming more aggravated after its application.

If a woman with a fibroid tumor is very anemic, the methods adopted by various clinics differ. The majority of gynecologists prefer surgery, if in their judgment a given case can stand the ordeal, unless one can be positively assured that all hemorrhage will stop immediately after a single application of x-ray and the after effects upon the already impoverished blood will not be permanent. In some of these conditions enumerated it is not really the actual surgical work but the general anesthetic that is counterindicated and here lumbar, sacral or local anesthetic is often substituted with excellent results.

The counterindications to the use of x-ray are cancer of the cervix or body of the uterus in addition to the fibroid tumor, unless a cancer dose is used sufficient to affect the malignant cells directly. Here the results are, however, as bad as after surgery. All ovarian and parovarian tumors, a prolapsed uterus, a hernia in addition to the tumor should be operated on. In tubal diseases surgery is preferred, unless one wishes to treat these cases conservatively, as is greatly in vogue now in many clinics. Pedunculated, subserous and submucous tumors, also tumors reaching in size above the umbillicus should be operated on, the latter causing various pressure symptoms on the nerves, bowels, bladder or ureters, pain due to necrosis or stretching of the serous layer of the ueterus, also occasionally suppuration of part of the tumor. Even here some report success with the x-ray but it must be remembered that to get immediate results a larger dose than usual must be applied. In pregnant women it is counterindicated during the whole period of gestation.

In young women, where sterilization should if possible be avoided, surgery is still the better method of procedure. It is sometimes possible to shell out a tumor or at least leave the ovaries in and the patient avoid the climacteric symptoms which are very often severe in the young women. Against this the x-ray enthusiast will claim that here his method is as good if not better. According to Seitz and Wintz, in these cases by giving a slightly smaller dose, just enough to destroy the ovarian follicles but leave the interstitial tissue intact, the endocrine effect of the overy would not be destroyed and the after symptoms mild if at all present; also, even where a tumor is shelled out of the uterus, the woman has a very slight chance of any future pregnancy and if she does become pregnant would not carry thru to full term. The latter statement is, however, denied by many clinicians.

In surgery one must figure on about 14 per cent of postoperative complications, consisting of wound infections, hemorrhages, peritonitis, ileus, thrombosis, embolism, injuries to other abdominal or pelvic organs, lung and heart diseases, nephritis, nervous and mental disturbances and other accidental complications. In the x-ray treatment the death rate is negative. The immediate after symptoms of headache, dizziness, general malaise, fever, sleeplessness, etc., are usually mild and temporary. The danger of skin burns can be prevented by a better technic. The effect on the blood is in nearly all cases temporary and, as stated above, in very anemic cases surgery is nearly always indicated.

The former counterindications to the use of x-ray, that it took many months to bring about permanent amenorrhea, can now be put aside, since in many cases, if done in the first half of the intermenstruum, the desired result can be brought about in one sitting of from two to three hours, while the shortest time for a woman to return to her former occupation after a surgical operation is from four to six weeks. With the present method of application of x-ray, the expense as against a surgical operation is not to be compared.

Every physician knows of cases where women have neither the time, the necessary finances or fear of a surgical operation and will let their condition go on until very anemic or until other symptoms become unbearable before consulting a physician. Where the general public has learned that in a great many cases there is a simple, safe and inexpensive method of treatment, patients will apply for treatment earlier with a much better chance of recovery. And, if surgery is indicated, once the woman has applied for treatment, with proper tact and necessary explanation of the conditions found and the reasons for an operation given, she will in nearly every case take the advice of her physician.

Drug Therapy in Pyelitis—An attempt was made by Henry F. Helmholz, Rochester, Minn. (Journal A. M. A., July 22, 1922), to determine the direct mode of action of several of the more commonly used drugs in the treatment of pyelitis. The action of the alkalis, of hexamethylenamin and of salol has been studied. In acute cases of pyelitis, the alkalis are useful, but there is no evidence of any direct specific action. Hexamethylenamin has a very definite bactericidal action in the bladder, but whether this applies also to the pelvis of the kidney has not been demonstrated.

INTRAMENINGEAL HEMORRHAGE OF THE NEW-BORN*

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Meningeal hemorrhages have always been of the greatest interest and concern to the pediatrist. The condition is the most serious of the more frequent disturbances of the new-born. In addition to the immediate dangers it is necessary in each case, notwithstanding even very mild symptoms, to consider the possibility of serious permanent defects in later life. Renewed interest has been stimulated by several new facts. They have explained the pathology to a great extent and have aided in the diagnosis and treatment.

History—The relationship of asphyxia neonatorum to mental deficiences and spastic states which developed later, was discussed by Little, in 1861. It was not definitely determined until many years later (1885) by McNutt that Little's disease, or congenital cerebral spastic paralysis, was due to cerebral hemorrhage. Cushing, in 1905, demonstrated that craniotomy with removal of the clot was a feasible operative procedure and a preventive of subsequent cerebral degeneration. Duke, in 1910, differentiated between bleeding time and coagulation time and described a method for studying the bleeding time. Schloss and Comiskey, in 1911, successfully used whole blood intramuscularly in cases of spontaneous hemorrhage in infants. Green, in 1914, first suggested hemorrhagic disease of the new-born as a cause of cerebral hemorrhage. Foote, in 1918, advocated the practice of lumbar puncture therapeutically, and suggested human blood or horse serum intramuscularly in addition in every infant, in whom intracranial hemorrhage was suspected. Warbrick, in 1919, concluded from a postmortem study that hemorrhagic disease of the new-born was an important cause of cerebral hemorrhage, with an incidence of 44 per cent in her series. Rodda, in 1920, established a rapid method for obtaining the coagulation time of the blood. He demonstrated prolonged coagulation and bleeding time in all normal new-born children, moderate on the second, third and fourth days of life; increasing to a maximum on the fifth day; and returning gradually to normal by the tenth. In cases of hemorrhagic disease of the new-born the bleeding and coagulation time were both found much increased over this normal physiologic increase. The return to normal and the cessation of hemorrhage that followed the use of whole blood were also determined by him.

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* Read before the Annual Meeting of North Pacific Pediatric Society, Victoria, B.C., December, 1921.

Etiology—Fifty per cent of the deaths in the first few days of life are caused by intrameningeal hemorrhage. One series of autopsies on infants and children dead from all causes showed intracranial hemorrhages, or evidence of the same, in 17 per cent of the cases. Evident trauma, such as forceps injuries, is an important cause but has been given undue prominence. In many patients hemorrhage has occurred following spontaneous and easy labors of short duration. Premature infants, breech deliveries, and also asphyxiated babies are greatly predisposed. Asphyxia is responsible for considerable cerebral congestion. It may, therefore, either result in producing hemorrhage or increasing that already existing. Congestion as a factor is especially important in long and protracted labors. Meningeal hemorrhage may also occur as a manifestation of hemorrhagic disease of the new-born. Congenital syphilis does not appear to play the part with which it is usually credited.

Pathogenesis—The compression and overriding of the skull bones during delivery are frequent causes of meningeal hemorrhage. Another factor favoring cerebral hemorrhage is congestion, so often associated with asphyxia, especially when prolonged. It is generally assumed that the intracranial blood vessels of infants are very delicate and susceptible to injury. The small veins emptying into the sinuses are unprotected because of the absence of the adult adhesion between the dura and cerebral cortex.

Pathologic Anatomy—The source of blood varies. In overriding of the parietal bones the superior longitudinal sinus is stretched and compressed, and the small veins emptying into it are distorted and torn; the sinus itself is rarely ruptured. In the same manner the small veins tributary to the transverse sinus may be torn, when the upper margin of the occipital bone is forced under the parietal bones. Congestion is probably the only factor in hemorrhage into the lateral ventricles from the straight sinus. A frequent source of bleeding is rupture of the tentorium. These were the various sites of hemorrhage found in 14 per cent of all dead infants in Beneke's series.

The hemorrhage may be located, first, between the skull bones and dura (epidural); second, between the dura and arachnoid (subdural); or, finally, in the reticulum of the pia mater (subarachnoid.) The subarachnoid hemorrhages are often small, flat and multiple; the larger extravasations are usually bilateral, subdural, and more extensive on one side than on the other.

The following types are recognized for clinical classification: (1) Supratentorial hemorrhage, (2) infratentorial hemorrhage, (3) hemorrhage into the ventricles.

Rupture of the tentorium results from stretching of the dura and may be:

(1) Extensive—This type is always transverse and usually involves the free edge of the tentorium.

(2) Intermediate—A superficial tear on the upper surface.

(3) Mild—Hemorrhage occurs between the layers of the tentorium.

Associated Pathology—Meningeal hemorrhages may rarely be complicated by hemorrhage into the brain tissue. Among these the medulla is occasionally injured. The increased intracranial pressure resulting from the hemorrhage may be sufficient to widen the sutures and fontanelles, the cerebrospinal fluid may be blood-stained. Atelectasis of a marked degree is often observed.

It has been demonstrated by autopsy that many cases of cerebral hemorrhage in the new-born show hemorrhage in other parts of the body; for example lung, adrenal glands and other organs, which cannot be explained by trauma. Bleeding time and coagulation time, when performed in these cases, showed prolongation over the normal. Cerebral hemorrhage of this type is part of the condition known as hemorrhagic disease of the new-born.

In cases of traumatic hemorrhage, when the bleeding is slight, it may be possible that no symptoms develop until later, when the superimposed disturbed coagulability of the blood causes the bleeding to recur, increasing the size of the clot.

Symptoms—The symptoms depend on the size and location of the hemorrhage. In many cases there is still-birth or death occurs shortly after delivery while still in asphyxia. Hemorrhage may occur without symptoms.

In a great many cases the symptoms come on gradually. The typical supratentorial hemorrhage is manifested by:

(1) An initial stage of restlessness, associated with cries of pain. The cry is peculiarly sharp, shrill, and penetrating. The child refuses to nurse. These symptoms, which are often noted as early as the first or second day of life, are often associated with disturbed respiration. The respiratory excursion may be longer and deeper. Intermittent or spasmodic respiration may occur. Injury of the respiratory center by pressure of the medulla may lessen or inhibit the baby's cry. On the other hand, the infant may be quiet, if brain contusion has occurred. The skin is often very pale. The pulse is full and strong but the slow rate of increased intracranial pressure does not often occur.

(2) A period of cerebral irritation. Convulsions are very characteristic and, following the presumptive signs, (pallor, refusal to nurse, and cephalic cry) are diagnostic. The convulsions are tonic and clonic and usually started by external stimuli. A convulsion may be the first manifestation of hemorrhage. The intensity varies from slight twitchings to severe epileptiform seizures. The convulsions may be hemiplegic, indicating a focal lesion on the opposite side of the brain, but this may be confused by the same manifestations resulting from compression and edema of the other hemisphere; yawning and sighing often occur with hemiplegia. The skin and tendon reflexes are increased.

The eye symptoms are often multiple. Ptosis, strabismus, and nystagmus are commonly found associated. Myosis and ptosis may occur on the same side as the hemorrhage. Unequal and dilated pupils are often seen in serious cases.

Patients with early recovery from hemorrhage show improvement on the third or fourth day. The convulsions lessen in frequency and usually disappear entirely by the end of the first week.

(3) A terminal period of paralysis occurs in the severe case. The baby lies somnolent or even in a comatose condition. It does not cry, show a desire to suck, nor does it react to external stimuli. There is paresis of the affected muscles. Both tendon and skin reflexes disappear. Death usually occurs on the fifth to eighth day and results from respiratory failure or aspiration pneumonia.

Infratentorial hemorrhage and hemorrhage into the lateral ventricles usually produce symptoms very much alike. In most cases death is almost immediate from asphyxia. If death is not immediate, a preliminary stage of restlessness and pain is absent in this type. Bilateral convulsions, respiratory spasms with marked cyanosis, or spinal symptoms with neck rigidity and opisthotonous, are usually both the first and terminal symptoms; death occurs in from twenty-four to forty-eight hours. Bulging of the anterior fontanel occurs late in these cases. In ventricular hemorrhage facial convulsions alone have been noted.

In cases of meningeal hemorrhage, due to prolonged bleeding and coagulation times, the syndrome of hemorrhagic disease of the new-born is responsible for additional symptoms. The hemorrhagic tendency usually begins on the second or third day and may be manifested by bleeding in many locations, such as intestines, adrenals, lung, in fact any organ.

Where there is manifest bleeding as from the genitalia, bowel, nose, umbilicus, or into the skin, any evidence of associated meningeal hemorrhage will speak against trauma as the only etiology. On the other hand, meningeal hemorrhage without such generalized bleeding, will be considered as solely traumatic, unless bleeding and coagulation times are prolonged. Intracranial bleeding in these latter cases is probably a continual oozing, superimposed upon a small traumatic hemorrhage. This explains the slow gradual development of symptoms in some cases.

Hemorrhagic disease of the new-born lasts but a few days and those who survive recover completely from the hemorrhagic tendency, tho there may have been permanent destruction of cerebral tissue.

Sequelae—Meningeal hemorrhage is responsible for the heavy toll of physically and mentally debilitated children classified as having Little's disease. The degenerative processes secondary to hemorrhage can produce epilepsy and various degrees of mental defectiveness.

Prognosis—Some statistics have given the immediate mortality as high as 60 per cent. A bad prognosis is indicated by deep asphyxia, from which it is necessary to revive the infant artificially, usually under difficulty. The prognosis is always serious, when the hemorrhage produces symptoms within the first few days of life. It is true that hemorrhage may occur, produce all classical symptoms, and be followed by complete recovery without any special treatment. In other cases hemorrhage may occur and produce slight unrecognized symptoms and yet result in permanent residual symptoms.

Diagnosis—An immediate diagnosis is often difficult. Focal irritations and a blood-stained spinal fluid are definite signs. It is usually safe to make a presumptive diagnosis on such signs as pallor, restlessness, refusal to nurse, facial edema, cephalic cry, while a positive diagnosis is made, if they are followed by convulsions.

It is important to remember that blood in the spinal fluid may result from injury to a vessel during the puncture. On the other hand, a normal spinal fluid may be found in some cases of meningeal hemorrhage, e. g., in the anterior fossa of the skull.

In cases of meningeal hemorrhage with blood in the spinal fluid, the color of the fluid varies from red to brownish red, depending upon the age of the hemorrhage and remains uncoagulated for some time. Blood-stained fluid from cerebral hemorrhage flows as freely at the end as at the beginning of the puncture, and the supernatant fluid is yellow after standing. The blood in spinal fluid contaminated by puncture coagulates quickly, appears in largest amount at the beginning of the flow and the fluid is clear on standing.

Evidence that the hemorrhage has occurred or progressed because of hemorrhagic disease of the new-born is furnished by finding the coagulation time and bleeding time prolonged above the normal. Duke's method is used to obtain the bleeding time. The heel of the infant is sponged with ether and a small puncture is made with a sterile lance blade or scalpel to produce a free flow of blood without the slightest pressure. At half minute intervals the blood is blotted on absorbent paper. This gives a series of blots of gradually decreasing size. Each blot represents one-half minute's outflow of blood. The rate decrease in the size of the blots shows the rate of decrease of the hemorrhage. The total duration of such a hemorrhage is called the bleeding time. The normal bleeding time has a range from two to five minutes.

Rodda's method of obtaining the coagulation time is easily carried out. Two one and one-half inch watch glasses and a No. 6 lead shot are required. Glasses and shot should be thoroly cleaned. The puncture is the same. A clean watch glass containing the No. 6 lead shot receives the second drop of blood. A second watch glass is inverted over the first. The watch glasses are gently tilted every thirty seconds until the shot no longer rolls, but is fixed in the clot. The end result is sharply defined, the shot is firmly embedded, so that the glass may be inverted without dislodgment of the shot. The time is reckoned from the time the first drop falls. The average time is seven minutes, with a normal range from five to ten minutes.

The differential diagnosis from cerebral contusion is not so very important. Usually there is a history of trauma and an absence of blood in the spinal fluid.

Congenital pulmonary atelectasis of a pathologic degree produces symptoms much like cerebral hemorrhage, differing, however, in the absence of focal symptoms and blood in the spinal fluid.

Treatment, Prophylactic — The coagulation time and bleeding time of the blood should be determined in every new-born presenting cerebral symptoms. If these are delayed, human blood should be administered. The question of transfusion by utilization of the superior longitudinal sinus is still open. We are opposed to it. Even in ordinary cases there is sufficient opportunity for the entering needle to penetrate the sinus and for the blood to be injected outside the vein. With the decreased power of blood coagulation, the danger of hemorrhage from the puncture would be greatly increased. Another argument against the use of the sinus for the injection of blood is the occasional displacement of the sinus so far from the mid-line as not to lie under the fontanel. Brown is enthusiastic in recommending the use of whole blood thro the internal saphenous vein over the malleolus.

The subcutaneous use of whole blood has the advantage of easy application and absence of the necessity of blood grouping. By its use hemorrhage can be controlled and at the same time the disturbed coagulation factors return to normal. Its disadvantages over transfusion are that it does not relieve the profound anemia and that it may be necessary to repeat it to control bleeding. From 15 to 25 cc. of blood should be used at each injection, which may be repeated as often as twice daily.

Active Treatment—The treatment must be expectant and symptomatic. Absolute quiet is essential. All unnecessary external stimulation should be avoided. Chloral and bromides may obtain additional quiet, prevent crying and stop convulsions. It is important that the infant be not allowed to cry, because it produces increased intracranial pressure which may detach the clot or cause oozing around it. To prevent aspiration of food nasal catheter feeding may be necessary.

Spinal puncture may have a therapeutic as well as a diagnostic value. It has been advocated to repeat it daily until the fluid is free from blood.

Fontanel puncture is considered a more efficient procedure than spinal puncture. Aspiration of the subdural space is best made at the lateral angle of the anterior fontanel. The needle is introduced in a direction almost parallel with the skull. It may be carefully swept in various directions, if blood is not immediately obtained, but care must be taken not to cross the middle line to avoid injury to the falx or longitudinal sins.

Operative interference is especially justifiable in subdural hemorrhage in the anterior fossa of the skull, providing little or no blood has been obtained by fontanel puncture. It should be performed early before paralysis appears and as soon as the progressive character of the symptoms of intracranial pressure has been indicated. Surgery should be controlled by blood studies and the further use of whole blood if necessary, in order that the operation may not be undertaken in the face of the danger of uncontrollable hemorrhage.

Against Measuring Chest Girth at Rest—The conclusion reached by Horace Gray, Boston (Journal A. M. A., July 29, 1922), is that the chest girth should not be measured at rest, except as a necessity in children who do not breathe freely, as occurs not infrequently under six years of age. Measurements are better taken at both full inspiration and complete expiration, and the average used as the midway girth.

INFECTIOUS DIARRHEA IN CHILDREN*

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The primary cause of infectious diarrhea is a bacterial invasion of the mucous membrane of the small and large intestines, usually the colon and the lower part of the ileum, caused either by the ingestion of pathologic organisms foreign to the intestine or possibly by the lighting into pathologic activity of organisms normally present in the digestive tract.

The symptoms caused by these different types of organisms are practically identical and it is impossible to determine from them the type responsible for the disturbance. In fact, clinically it is often impossible to distinguish between cases of fermentative diarrhea and the milder cases of infectious diarrhea, exhibiting no evidences of pus and blood in the stools.

Pathology—The pathologic lesions of the intestine vary. There may be only a catarrhal inflammation or a hyperplasia of the solitary follicles and of Peyer's patches. In many there are numerous ulcerated areas and in others again a pseudomembrane is formed. These lesions are usually limited to the large intestine and the last few feet of the ileum. The mesenteric glands are invariably enlarged and degenerative changes are present in liver and kidneys.

Bacterilogy—Many organisms have been suggested as the causative favor in infectious diarrhea but, since a number of these have been repeatedly cultured from the stools of healthy children, the pathologic significance of their presence in this disease is still inconclusive. The organisms which have been most frequently—one might say almost exclusively—isolated from the stools of these cases, and which are not found in the intestinal flora of healthy children, are the members of the dysentery group of bacilli.

All the different types of the dysentery organisms seem to produce similar pathologic lesions and clinical symptoms. The particular type can be ascertained only by isolation of the causative organisms and by study of its cultural and serologic characters. The dysentery bacilli, particularly the Shiga type, form exotoxins and well as endotoxins.

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* Read before the Annual Meeting of North Pacific Pediatric Society, Victoria, B.C., December, 1921.

The pathologic changes in the colon are caused by endotoxins. Wherever the bacteria are localized in the intestine, they produce edema, followed by necrosis and an exudation of serum and cells leading to the formation of the so-called diphtheritic membrane covering the surface of the bowel. The necrosis accounts for the blood, and blood stained mucus thrown off in the bowel discharges.

The dysentery organisms are found only in the intestinal contents in the intestinal mucosa, mesenteric and lymph nodes. They do not ordinarily invade the blood stream. This fact may account for incomplete immunization in some patients and it has been suggested as one of the reasons for the development of the carrier state. It is the carrier in this as in other infections that is the greatest menace from the public health standpoint, due credit at the same time being given to our old friend the housefly for his active cooperation and ardent assistance.

Symptoms—The onset is usually abrupt with vomiting in about 50 per cent of cases, and occasionally convulsions. Fever is always present, tho usually moderate and prolonged, in contrast to the fermentative form in which it may be high but of briefer duration.

Pain in the abdomen and tenesmus is early, marked and troublesome. Prolapse is not infrequent as a result of the straining.

Stools—During the first three or four days these are numerous, contain blood and mucus, with little if any fecal material, and are accompanied by tenesmus. After this period the mucus changes to pus and fecal matter begins to appear.

The reaction is usually alkaline to litmus. A direct smear, taken early in the disease and strained by Gram, shows a fairly uniform picture, viz, numerous pus cells, a few organisms, these mainly Gram negative bacilli, with usually some Gram positive cocci and streptococci. Smears from later cases are not typical, probably on account of the influence of diet on the intestinal flora, the numbers and kinds of organisms tending to become large and varied.

The urine is invariably diminished, owing to the lessened intake of fluid and to the loss of water by the bowel. The abdomen in the majority is not distended but sunken, the skin dry and the tissue turgor poor.

Loss of weight is marked and may be rapid, owing to the dehydration. This dehydration, dessication or loss of water is possibly the most important feature of the disease.

According to Marriott, the entire clinical picture presented by infants who have lapsed into toxic, shock-like condition following severe diarrhea may be explained on the basis of the water loss from the body which is known to occur. That factors other than water loss are operative, such as toxic absorption from the intestinal lesions, cannot be denied, but it is unnecessary to assume other factors in order to explain the observed facts.

Schloss says the symptoms are essentially those of uremia. In uremia the defective kidney function is due to an organic lesion. In intestinal intoxication the renal lesions are not sufficient to account for the impaired elimination by the kidney but it is amply accounted for by the actual lack of water necessary for the formation of urine. This lack is due to the following factors: Loss of water in the stools, vomiting, or refusal of child to take fluids.

The dehydrated tissues hold as much water as is possible, so that none is available for the formation of urine. As a result of this deficient secretion of urine we have retention of nitrogenous waste products, as well as the failure of the kidney to assist in maintaining the acid-base equilibrium by excreting acid phosphate.

Treatment—The treatment of infectious diarrhea in infants is apparently not a uniformly standardized procedure. In fact methods adopted by two different schools of teaching seem diametrically opposed.

As summed up by Morgan, of Toronto, in a paper last year, we have those who advocate the use of protein milk, tho without putting forth any scientific reason therefor except its success in the treatment of fermentative diarrhea, where its logic is readily appreciated; and those, on the other hand, who, on the basis of certain biochemic and bacteriologic principles, employ a fermentable carbohydrate such as lactose.

These principles are as follows:

(1) During a period of starvation sugar,

which has been stored up in the liver as glycogen, is exhausted. When it is gone protein metabolism commences. Sugar, therefore, acts as a protein sparer.

(2) In the laboratory it can be shown that members of a certain group of bacteria, including the dysentery bacilli, if inoculated into media containing both protein and a fermentable carbohydrate, will attack the carbohydrate first and, when this is finished and not before, will attack the protein, break it down and liberate toxic products of putrefaction.

(3) The specific toxin of the bacterium is produced most readily in an alkaline medium containing protein.

(4) Formation of lactic acid as one of the end products of fermentation tends to inhibit the growth of the bacillus dysenteriae and streptococcus. On the basis of these facts treatment consists in the exhibition of an easily assimiliated, readily fermentable carbohydrate, namely lactose, to obtain

1. A diminished absorption of the products of protein decomposition.
2. The ingestion of a readily assimilated food.
3. The inhibition of the growth of putrefactive organisms, and the formation of bacterial toxins by the lactic acid produced.

I am taking the liberty of reporting two cases of diarrhea occurring recently in my own practice, not that they are unusual in any particular but they were of interest to myself, both being in hospital at the same time and both presenting features similar and dissimilar:

Case 1. Jap baby, 24 months, female, admitted to hospital September 30.

Previous history. Breast fed 18 months with the usual conglomerate diet of fresh milk, condensed milk, sweet cake, orangeade ad nauseam. Taken ill two days previously with diarrhea. Ten loose stools, watery with mucus and later blood during night, culminating in convulsions at noon the following day. No vomiting but frequent stools with blood and mucus until admission.

The child on admission was alert, crying, tissue turgor fair, temp. 100 degrees, not vomiting.

Treatment was starvation for twelve hours, water ad lib.

Protein milk	18
Barley water	10

Water or weak tea in the interval.

This diet was maintained and gradually increased for five days, the child taking it well, when arrowroot biscuit twice daily was added.

The temperature became normal on the ninth day; the stools were free from blood with little mucus and were two daily.

Rice jelly and junket were then added to the diet and on the eleventh day the child was discharged.

I considered this case clinically one of infectious diarrhea from the child's age, the sudden severe onset with bloody stools and convulsions. However, in numerous smears no pus was ever noted in the stools and the bacteriologic picture was a varied, indefinite and atypical one. However, the fact that a protein milk diet seemed to be quickly effective might be cited by some as a therapeutic argument in favor of it being fermentative diarrhea.

Case 2. A frank case of infectious diarrhea. Japanese girl, 2 years, 8 months.

History of sudden onset with vomiting, diarrhea with mucus and blood seven days previously. Diarrhea 10-12 stools daily until admission on Oct. 8. Temp. 103 degrees.

Child was apathetic, quiet, noticeably dehyrated, skin dry, abdomen sunken.

Water was taken in only very small quantities. Protein milk and rice jelly were offered, but with difficulty could more than a few ounces be given. This for two days.

Stools continued 12-15 daily. Smears shewed numerous pus cells, Gram negative bacilli and streptococci.

The child was given 150 c.c. of 5 per cent glucose in saline subcutaneously twice daily.

The protein was discontinued and the patient offered lactose 5 per cent solution, rice water, buttermilk, arrowroot pap, alternately q 2 hours or as she preferred.

In two days blood disappeared from stools and they reduced to six daily.

Five days later temperature was normal and stools four, described as greenish-brown, good deal of fecal matter, little mucus.

The subcutaneous injections were discontinued and the subsequent course uneventful.

In cases of infectious diarrhea accurately diagnosed as such, leaving aside the question of specific antitoxin therapy, whether one prefers treatment with protein milk or with lactose and lactic acid, and personally the latter appeals to me as more logical, there is one additional feature that is unquestionably most important and which must be emphasized, that is the employment of saline or other injection, whether subcutaneous, intravenous or intraperitoneal, to supply the fluid which is so necessary. In view of the seriousness of the effects of dehydration on the whole economy of the patient, if we neglect to remedy early and effectively this phase of the condition, we are failing to use what is possibly the most effective weapon in our armamentarium.

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DISEASES OF THE HIP JOINT IN CHILDREN*

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For a long time it has seemed to me desirable that a good monograph should be written on the symptomatology and differential diagnosis of the conditions affecting the hip joint in children. I am by no means attempting to do this thing in the present sketch, but am merely indicating the outlines for such a study. My reason for speaking on this subject is to draw attention to the fact that there are a number of conditions affecting the hip joint in children. In the older textbooks, and I fear in the minds of many physicians of today, hip joint disease and tuberculous arthritis are synonymous terms. When a child begins to complain of pain in the hip or show the objective sign of limping and, if in addition there has been a more or less recent injury to the leg, the diagnosis of tuberculosis of the hip is arrived at almost universally.

In every communication that I have made in recent years I have tried to use as the basis of my remarks my own experiences and not to give textbook discussions or attempt a categorical survey of the subject. In this instance, to make my remarks as concise as possible and at the same time to cover the ground as completely as desirable, I have chosen the following method of approach.

First, I have made a tabulated list of the conditions which I have encountered that caused his disability in children; then, looking back in our records until the list was included in the consecutive cases in our files. In the last twenty-six cases the diagnosis have been as follows: Tuberculosis 6, osteochondritis juvenalis 6, congenital dislocation 1, fracture of the neck 1, epiphyseal dislocation 1, acute suppurative arthritis 2, acute simple arthritis 2, acute epiphysitis 4, rickets 1, coxa vara of unknown origin 1.

I have never seen a case of malignant or benign tumor primarily affecting the hip joint of a child. Sarcoma of the ilium has been seen, but this is excluded. Hereditary syphilis I have seen affecting the knee but not the hip. Hemophilia I have not seen. We have seen a case of hysterical paraplegia in a fourteen year old girl, but no true neurotic joint. The deforming polyarthritis of Still has not come under our notice. I have excluded as not being apropos all those cases of limp due to infantile paralysis, with great shortening of one leg, tilting of the pelvis, and even subluxation of the hip joint, since the hip joint is only part of the picture and these present no diagnostic problem.

TUBERCULOSIS

This condition of course is quite common. Not so common as in older and poorer communities, nor as I have said above, as common as is usually suspected. The parents of most of the patients that we have seen are indigent and have wasted what little money they did have and what resistance the child had in the useless, harmful hands of the charlatans. The early diagnosis is not always easy. The prevailing present opinion seems to be that all tuberculosis is contracted during the very early years of life and that, if the individual ever develops the clinical signs of the disease, it is at some point of lowered resistance. The impact of every fall and of all weight bearing activity in the lower extremity is finally on the hip joint.

Given, then, tubercle bacilli potentially in the blood stream and the contused membrane or injured epiphyseal region, and tuberculosis of the hip may supervene. It seems now to be settled that tuberculosis may originate in the synovial membrane as well as in the bone itself. This point was long under discussion. Many men maintained that primary synovial infection did not occur. At this point I wish to say a few words about the relation of trauma to disease. Youngsters are always getting hurt, falls, bumps, blows. In my opinion parents and the courts of justice attach far too much importance to the causal relationship of injury to disease. The tendency is becoming exaggerated in these days of compensation furor.

I have a young man under my observation at present who has a complete transverse myelitis as revealed by a laminectomy. His initial symptoms came on months after a trivial fall on one knee in a mine. He is now drawing industrial disability compensation and a similar reward from the Government, as in the interval between the fall and the onset of symptoms he was inducted into military service. However, for the present at least we must content ourselves with believing that trauma has some relationship to the precipitation of bone tuberculosis. Da Costa has covered this subject completely in his article in the *Annals of Surgery.*

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* Read before the Twenty-seventh Annual Meeting of Utah State Medical Association, Salt Lake City, Utah, Sept. 13-15, 1921.

If we could really separate into three classes the people who say that their troubles started from injuries, we could solve this entire problem. First, those who are perfectly genuine in their story; second, those who go back and find the nearest injury and connect it with the disease; third, those who fabricate an injury out of whole cloth. In the next twenty-five years the medical profession will be faced with one of its gravest problems in trying to solve the real, fancied or fabricated etiologic relationship of injuries and disease.

The one invariable symptom in all troubles within the hip joint is limitation of abduction, so that this sign is not at all a specific one for tuberculosis. A low leucocyte count and mild fever which may have sharp exacerbation, especially after exertion or too thoro examination, a stationary or decreasing weight with a painful limited hip, all of which have come on gradually, make us fairly certain of hip tuberculosis. Some cases may be more violent in onset and even a month after the initial symptoms the child may be helpless. The tuberculin test is of value in children, especially if it is negative, when it almost surely rules out tuberculosis. In these days the final word on any bone or joint condition should not be said until a good x-ray picture has been studied, and here we must remember that tuberculosis is a chronic infection. A chronic inflammatory process in bone follows the same pathologic lines as a similar process elsewhere. That is, there is a combination of destructive and reparative processes. The defensive action on the part of the tissues of course causes a growth of new cells which are osteogenetic; hence, if enough time elapses new bone is formed in and around the destroyed areas. The very heterogeneous character of this new bone formation is one of the features of bone tuberculosis. It is plain, therefore, that, until time enough has elapsed to allow these gross changes to show on the plate, a certain diagnosis cannot be made.

OSTEOCHONDRITIS JUVENALIS

Legg, of Boston, has described this condition as "quiet hip joint disease in children." It is now known in this country as Perthe's disease, because of our former predilection for things German. Just what the etiology and pathology of this disease are I do not know. It is fairly common; orthopedists all over the world have reported series of cases lately. Formerly they were nearly all diagnosed as mild tuberculosis. I think that some of the cases that Dr. Huntington of San Francisco cured so readily by his "tunneling" operation were undoubtedly of this nature. Phemister has recently operated upon a case and secured material for study. His findings are inconclusive.

The most recent opinion is that the disease is a delayed rickets or some similar dystrophy. There is a softening, flattening and shattering of the epiphysis. Under treatment the fragments reassemble and coalesce, and the joint surfaces become smooth. The acetabulum seemed to be flattened too in some cases. The angle between the neck and the shaft becomes lessened, coxa vara results and is permanent.

Symptomatically the disease has three characteristics. One, limp not very painful, far less than the pathology would seem to warrant; two, there is no fever or cachexia; three, limitation of abduction which may be marked. Other motions are practically normal. The disease usually occurs in boys, is nearly always unilateral and affects the hip far more frequently than all other joints combined. When treated with a short spica cast, crutches and a built up shoe on the opposite side, restitution occurs in one or two years.

ARTHRITIS AND ACUTE EIPIPHYSITIS

Acute simple arthritis may occur in the hip as in any other joint. It may be a traumatic synovitis or a rheumatoid condition. The child limps, may have slight fever, motion limited in all directions and usually recovers in two to four weeks. Acute suppurative arthritis and acute epiphysitis may be considered together. I have seen two cases of suppurative hip joint, both following pneumonia and both in children before they could walk. Incision and drainage were practised and both recovered fairly normal joints. Acute epiphysitis is really a typical acute osteomyelitis, having the same etiology and symptomatology as this disease elsewhere. Usually there is an antecedent or coincident infectious disease, such as tonsillitis, a fall on the hip and within twenty-four to forty-eight hours a violent onset of symptoms, pain in the hip, high temperature and general prostration. There is rapid destruction of tissue, epiphysis becomes a sequestrum and the entire joint structures are involved. Many of these cases under proper treatment become quiescent and eventuate in ankylosis with much production of new bone. A luxation of the distorted remains of the head and neck frequently occurs, causing shortening, malposition and painful disability.

FRACTURE OF THE NECK AND EPIPHYSEAL DISLOCATION

These are not very rare. Whitman emphasized these conditions years ago. The fracture is frequently green stick and may not cause enough disability to keep the child from walking after a few days. Of course rotation deformity is absent, coxa vara may result from the lack of treatment and continued use of such a limb. Epiphyseal separation and complete fracture cause the same symptoms as in an adult, except that there may be little or no shortening. If the epiphyseal separation is incomplete, there may be a rotation of the neck at the line of separation, causing an outward rotatory deformity. I have one such case under observation now. Complete separation frequently results in absorption of the detached fragments because the blood supply is poor, and then there may occur luxation of the remaining portion. The diagnosis of an old epiphyseal separation with absorbed head from an old epiphysitis or even an old congenital dislocation may de difficult. The history is usually more reliable than the x-ray picture.

CONGENITAL DISLOCATION

This is one of the most interesting problems of the orthopedist. The recent survey of the American Orthopedic Society shows how unsatisfactory the management of these cases has been in the past. It seems that anyone who really cures fifty or sixty per cent of the cases presented to him is fortunate. The etiology is obscure. It has always seemed to me that the most logical explanation is as follows: The fetus is doubled up in utero with the thighs strongly flexed on the abdomen. A violent or prolonged pressure applied at or near the region of the knee could lever the head out of the acetabulum. It has been maintained frequently that the acetabulum of girl babies is much more shallow than those of boys. This is the only reason that I can think of to account for the great preponderence of this condition in females; it is five or six to one.

The condition is usually not discovered until the child tries to walk, so that the youngster is twelve to eighteen months old as a rule before the doctor sees it. The acetabulum is deformed and the head and neck take on an abnormal form and structure, due to faulty position and function. The classical description of the gait and symptoms it is unnecessary to repeat. The sooner a child begins to use the joint with its component parts where they belong, the less will be the resulting deformity. I think that the dislocation should be reduced as soon as discovered so that stretched ligaments, distorted head and neck and shallow deformed acetabulum may be prevented. Woolf's law of adoption of structure defunction is universal and works thruout life. Most cases treated after six years are failures and a complete and perfect result even in the very early cases is extremely rare.

COXA VARA

The importance of recognizing early any condition which causes a shortening of one leg needs emphasis. When a child has one short leg, the secondary skeletal changes are the important thing to remember and prevent. I will mention three. (1) Talipes equinus, the natural reaching effect of the foot to overcome the shortening. (2) The tilting of the pelvis to accomplish the same result. This of course always results in a scoliosis with the visceral displacement and deformities which are inevitable. (3) The abnormal jar put upon the pelvis thru the femoral contact with every step causes a unilateral compression of the pelvis and the distortion of its outlet.

Coxa vara of course may be bilateral. Any of the conditions which I have been talking about heretofore may result in more or less of a varus deformity of the hip or a shortening of one leg. The treatment of these things I will pass by with only the admonition that I consider it very important.

To sum up. When a child is brought in with hip symptoms get his history. Has it always limped, and if a female, think of congenital dislocation. Has it had a mild injury followed by gradually developing disability with fever and loss of weight, he probably has tuberculosis. Has he had an acute infection, followed by a mild and then violent joint symptoms, he has an acute arthritis or osteomyelitis. Does he limp and has not complained, we must suspect Perthe's disease. Has he had a violent injury, remember that the major traumata can happen to the femoral head and neck of a child. Does he have a painless limp with one leg shorter than the other and the history is indefinite or cannot be obtained, he may have rickets or a coxa vara or a subluxation from any of the usual causes.

Walker Bank Building.

PRIMARY CARCINOMA OF THE LIVER

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Primary carcinoma of the liver has always been considered a rather rare occurrence. Owing to this almost every case has been reported. On searching thru the literature one finds a number of articles dealing with this subject. Most cases are reported in foreign periodicals, but in our own literature I have succeeded in finding quite a few articles referring to this subject. Among them I wish to mention Cohn[1], who principally deals with the pathology and etiology of the condition. Castle[2] in a concise, interesting article, reports a case of primary liver carcinoma in a child and in an excellent review of the literature from all parts of the world tabulates forty-two cases occurring in children between one month and sixteen years of age. Griffiths[3], similarly reports one case in a girl, aged 21 months, where an excised piece of the liver tissue showed carcinoma simplex. Gestring[4] reports one case associated with cirrhosis.

From a review of the literature the following facts can be gained: Primary carcinoma of the liver is very uncommon. Quite a few cases have been reported as primary carcinoma but are very doubtful. The comparative frequency between primary and secondary carcinoma may be gained from state death statistics. In 10,000 autopsies for all causes we found ten cases of primary and two hundred and forty cases of secondary carcinoma. Virchow stated five cases in six thousand autopsies; Mary Sly four cases in fifteen hundred autopsies, and Wheeler, at Guy's Hospital in London, fifteen in 5233. In a general way it can be stated that we find one primary case of carcinoma of the liver in one thousand autopsies, and that secondary liver carcinoma is twenty to forty times more frequent than primary.

Occurrence. It is usually found in adults between the ages of forty and sixty years, but there are several reports of its occurrence in children, as Castle's summary of forty-two cases shows. It has been stated that the disease in adults is more common in men than in women, but in children that the ratio is the reverse, and its comparative frequent occurrence in early life seems to indicate the possible embryonic character of this condition, or possibly rather an embryonic inherited predisposition.

Pathology. Primary carcinoma of the liver is always solitary and likely most frequently originates in the region of the gall-bladder, the liver hilus and the bile-ducts, and rarely from the parenchymal cells themselves. (Brooks[5].)

There are three main types (Adami and Nichols[6]). (1) Massive, always showing a large, single tumor, with sometimes a few isolated nodules in the neighborhood. The tissue is firm, whitish in color. There is rarely infiltration to parts in the periphery. The vessels in the immediate surroundings of the tumor are often occluded. (2) The diffuse form, simulating cirrhosis. The liver is enlarged, capsule thickened, and there is diffuse infiltration all around in the liver tissue. This form is very rare. (3) Nodular form with multiple carcinomatous nodules studded all around in the liver tissue. This form occurs with almost equal frequency as the massive type.

The tumor may arise from the liver cells themselves or from the small bile-ducts (more frequently from the liver cells). On microscopic examination the tumor cells resemble liver cells, except that they are larger and polygonal in shape. They have one or many nuclei, with nuclei larger and darker than in normal cells. It is of special interest that the tumor tissue, when originating from liver cells, retains the ability to secret bile, and that this also is the case with the metastatic tumor, wherever it may be.

Metastases from primary liver carcinoma are not as common and not as widespread as malignant diseases elsewhere in the body. Retroperitoneal glands and omentum are most commonly involved. Next in occurrence are metastases to the lungs. Very seldom is there involvement of the supraclavical glands, and very rarely the heart.

Etiology is unknown. It is found frequently in connection with cirrhosis of the liver. Therefore, this has been considered of a causative importance. Alcoholic excesses have also been considered, mainly due to the fact that alcoholic irritation very often leads to cirrhosis and this again to malignancy. By some authors it has been stated that all cases of cirrhosis can be conisdered as potentially malignant.

Another etiologic factor has been claimed to be syphilis. In fact, any chronic disease causing chronic and constant irritation in the system. In conformity with this view there have been reported cases of primary liver carcinoma, where dead parasites were found in the center of the cancer nodule. In the case of a Chinaman the nodular liver was found studded with leprous bacilli.

Biliary calculus has been associated with liver malignancy. There are two distinct opposite views about this. The first, or irritation theory, claims that the calculus by irritation causes malignancy; and, second, the concentration theory assumes that the growth is primary and is the cause of the calculus. Primary carcinoma of the liver originates, however, most commonly around the bile tracts and gall-bladder, and in most cases gallstones are present, a condition which we usually do not find in secondary carcinoma.

Symptoms. The symptoms vary greatly in different cases. In fact there is no symptom or group of symptoms which can be called especially characteristic for this condition. Clinically the earliest symptom is usually gastrointestinal but as a rule very vague. Sometimes symptoms of an atrophic cirrhosis predominate. There is often, also, a dull, dragging, aching, undefined pain in the abdomen, most commonly located to right side and to back. After tumor develops the patient suffers loss of flesh and more pronounced digestive disturbances. Emaciation, vomiting and constipation are frequent late symptoms. Icterus is present in 63 per cent, ascites in 58 per cent, general edema in 41 per cent, splenic tumor in 32 per cent, fever in terminal stages in 14 per cent, and 86 per cent of all cases are associated with cirrhosis.

The duration of this disease is seldom over three months; usually they die sooner. If they live longer than three months, it is a fairly good indication that it is of secondary nature and not primary.

Prognosis is always fatal. As this disease is extremely malignant, there can, of course, be no talk of any real treatment. All we can do is symptomatic treatment, relieving the pain and general distress. In some cases operation has been resorted to and in a very few cases there have been reports of success, but only where a solitary pedunculated tumor was found, originating from the lower border of the liver.

Case Report. There is nothing of special interest in the early history of the patient. He is fifty-one years old, Scandinavian, painter. The last four or five years he has not been feeling well, with vague gastrointestinal disturbances, pains here and there, and for the last two years, off and on, dizzy spells. He has never had syphilis, malaria or other sickness of importance. About one year ago he started to become yellow, clay colored stools, dark colored urine, complained of loss of strength and in a general way of feeling sick. This gradually increased so that for the last half year he was unable to do any work. During this time he has been gradually losing weight up to the last two months, when he started to gain again, probably due to edema. His total loss of weight has not exceeded fifteen or twenty pounds.

One month ago he started to swell in his limbs and also noticed that his waist measure steadily increased. He had some dull pains particularly in the right lumbar region, some dyspnea and a gradually increasing feeling of weakness, so that during the last month he had been kept in bed almost constantly.

Examination. The patient is a thin, emaciated, cachectic looking individual with a dirty yellowish, gray looking skin and mucous membranes. Distinctly icteric looking sclera and mucous membrane. Head, neck, throat, teeth, lungs, normal; heart probably slightly enlarged with a soft systolic indistinct murmur not localized to any special point.

His abdomen is greatly enlarged, measuring about forty-six inches and presenting in a general way the size of a nine months pregnancy. Due to the enormous distension it is impossible to palpate anything definitely but is a feeling of resistance in the right lower quadrant and a sensation of ballotment on light precussions in the right fossa iliaca. Liver dullness is from fifth rib to about three or four finger breadths below the costal arch. All veins in the abdomen are distended to a very distinct and pronounced caput medusa. There is a right inguinal hernia with some edema of the scrotum. There is also edema of both legs, but more so of the right.

Blood pressure, 140-80. Urine dark colored, clear, non-odorous, specific gravity 1025, acid, albumin, sugar, indican negative, bile strongly positive, microscopic examination negative. Blood showed 4,000,000 reds, 8,000 white and 70 per cent hemoglobin. No atypical blood cells were found. Wassermann negative.

The patient was taken to the Swedish Hospital and mainly in order to relieve his dyspnea, but also for diagnostic purposes, I made an aspiration of his ascites October 21. The liquid was almost pure blood, in all about a quart and a half. This did not, however, relieve his dyspnea a great deal as the rest of the liquid did not seem to be able to escape thru the trocar. After the tapping there was felt a distinct tumor in the right lower abdomen. The tumor was about the size of a child's head, fairly movable, somewhat tender on pressure and with a slightly irregular, nodular surface. There did not seem to be any definite connection between this tumor and the liver, as the examining hand could not be pressed clear down between the costal arch and the tumor. Lower edge of the liver seemed to be palpable about two finger breadths below the costal arch.

In the following two days the patient's condition did not improve. The liquid inside his abdomen seemed to increase rapidly and his dyspnea gradually got worse so that he had great difficulty in breathing. Suspecting the condition was of a malignant nature, but not knowing the exact origin or kind of malignancy present, I did an exploratory laporatomy on Oct. 23. Due to the patient's general poor condition it was decided to use local anesthesia.

Paravertebral blocking of sixth to tenth dorsal nerves was done. Muscle splitting incision parallel and about three finger breadths above poupart's ligament opened abdomen. There was no particular pain. Immediately upon opening a great deal of blood or dark reddish colored fluid escaped. On exploring the abdomen a tumor mass about the size of a child's head was found adherent to the lateral abdominal wall, and this tumor connected thru a pedunculated broad mass to the lower part of the liver itself. As from this exploration it was evident that we had to deal with a malignant condition, probably carcinoma, and because the liver itself was enlarged, studded with smaller and larger nodules, and the patient's condition, probably due to the loss of blood from his abdominal cavity, grew steadily worse, nothing further was done. The patient put to bed with a pulse hardly perceptible. Under stimulants, saline intravenously, his condition improved so that about an hour after the operation he had a pulse of 100, regular, and of good quality. I thought the immediate danger was over but within the next hour he gradually grew worse and expired three hours after operation.

Autopsy. Liver, 2,500 gm. There is a diffuse mottling over the entire surface, varying from an olive green to a bronze color. The surface is nodular over its entirety, nodules varying in size from 1 mm. to 2 cm. There is one nodular mass extending downward and to the right from lower left aspect of the right lobe, 9 cm. in diameter. This mass was fused to peritoneum, extending into the abdominal musculature: The right lobe measured 26 x 20 x 10 cm.; left lobe 22 x 12 x 4 cm.; cuadate lobe, 6 x 5 x 4 cm.

The gall-bladder was 2 cm. long and 5 cm. in diameter. There were no stones present. The cystic duct was partially obstructed, could be emptied by pressure.

Microscopic section of the large mass described as coming from left lobe shows frank malignancy of the adenomatous type. Section of the large nodules described on the lower edge of the left lobe also show adenocarcinoma. Section of the fine nodules scattered over the entire surface of the liver show them to be regenerated liver cells, coming from the biliary capillaries.

The increased size of the liver is due largely to increased connective tissue content, in which the degenerated liver lobules remain. The degeneration in some instances has gone so far as to almost destroy the entire lobule.

The spleen weighs 500 gm., measured 15 x 12 x 5 cm. Very firm and the cut surface shows structure largely replaced by connective tissue.

Diagnosis: Primary carcinoma of the liver. Nodular type (Adami). Hypertrophic cirrhosis with subsequent hepatitis, which has caused degeneration of liver cells, with an attempted biliary hyperplasia.

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Effect of Quinidin on Striped Muscle—Experiments made by J. G. Brody, Cleveland (Journal of A. M. A., July 29, 1922), with frog's gastrocnemius or sartorius, immersed in dilute quinidin solutions, show the following variations from the corresponding normal muscle (immersed in unpoisoned Locke's solution): (1) The height of contraction is not so well sustained. (3) The muscle ceases to respond to any stimulus much sooner than the corresponding unpoisoned muscle. (4) Load fatigues it more easily. (5) About ten stimulations a second cause a completely fused tetanic contraction in normal muscle; but with the quinidin muscle, the fusion is usually incomplete, no matter how frequent the stimulation, and becomes less and less complete the more the muscle is fatigued or loaded. (6) The quinidin muscle, therefore, responds intermittently to a tetanizing current. These effects can be conceived as depression of the muscle; slow recovery of excitability, and consequent failure to respond to rapid stimulation, until the muscle has rested; therefore, intermittent response to frequent stimulations, the rhythm of the contractions depending not on the frequency of the stimulation, but on the rate of recovery of the muscle. In consequence of the rest; the contractions are strengthened.

HETEROGENEOUS TESTICULAR GRAFTING IN MAN WITH HISTOLOGIC PROOF OF THE TAKING OF THE GRAFT

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A study of the literature of the past decade will show that attempts to apply free testicular autografts in man have generally met with poor success, and that the operation has not yet been brought within the realm of practical surgery. The subject of testicular transplantation is one that is always of very great interest to the surgeon as well as to the layman. Any progress, therefore, in rendering the operation more applicable to every day surgery is of sufficient importance to justify this preliminary report of my success in transplanting testicles from the higher apes to man, with histologic proof of the taking and functioning of the grafts.

That the testicle has two independent secretions has long been known; one connected with the generative function and derived from the seminiferous tubules, the other derived from the interstitial portions of the gland, the so-called puberty gland, being an endocrine, a sexual hormone which has the particular function of maintaining male characters and sexual potency and desire. These views as regards the testicular secretion have generally been accepted since the definite experimental and histologic findings of Bouin and Ancel in 1904, as well as the effects of autoinjection of testicular secretions previously observed by Brown-Sequard in 1889.

Animal experiments also showed that, when testicular tissue is freely transplanted, if the graft "takes," in time the seminiferous tubules of the testicle degenerate and their function ceases; but at the same time the interstitial part of the gland proliferates and its peculiar secretion can act on the organism in which the graft has been implanted and produce exactly the same effect as does the interstitial glandular secretion in the organism of a normal individual. Such results were demonstrated in a complete manner by Voronoff, of Paris, in 1919. Voronoff's experimental investigations and findings, which were supported by histologic proofs, showed not only that testicles could be freely transplanted in animals and become vascularized, but also that such grafts functioned in the host's organism; that they produced the effects produced by testicular interstitial secretion in normal individuals. This was proved by the effects noted when the testicular transplantation was made from young to old animals of the same species, in which sexual characters and desire had become impaired.

Altho literature shows that many attempts have been made to apply testicular transplantation to the human subject, yet on the whole such attempts have met with only a very limited amount of success. Such grafts have occasionally "taken", but the general rule has been, whether the testicle sought to be transplanted was a human or animal testicle, that it was either soon eliminated or became necrotic; else it was finally resorbed. In a few cases the resorption was apparently slow.

In many of the cases, where testicular transplantations have been made in man, the operators have reported a renewal of sexual vigor and desire. This might follow either if the graft had become actually vascularized or was merely degenerating but continuing its secretion in a diminishing ratio. In very few instances has the actual condition of the graft at a distance from the operation been verified by histologic findings. Such proofs of "taking" were obviously either difficult or impossible to obtain.

The fact, however, that such grafting, even tho only partially successful, did give clinical proof of a physiologic beneficial effect on the human system in restoring or improving physical and sexual potency was significant, and it very naturally leads to the great desire of some method by which testicular grafting can be made a surgical success. If a free testicular graft can be made to take and become vascularized, there can be little doubt from the knowledge already gained that it can also be depended upon as a functional success.

The importance of the subject in human economics has long impressed me, and my study of what has been accomplished as well as my own investigations have long convinced me that there must be some method of transplanting testicles which would bring the operation within the limits of practical surgery and with a fair degree

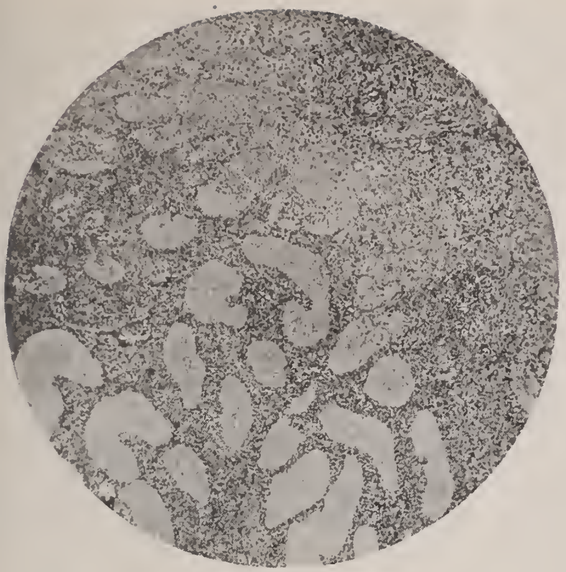

Fig. 1. Transplant of testis of higher ape into human. Author's technic. Magnification 60 diameters. Observe regression of tubuli seminiferi, proliferation of interstitum and vascularization. Removed four months after transplant.

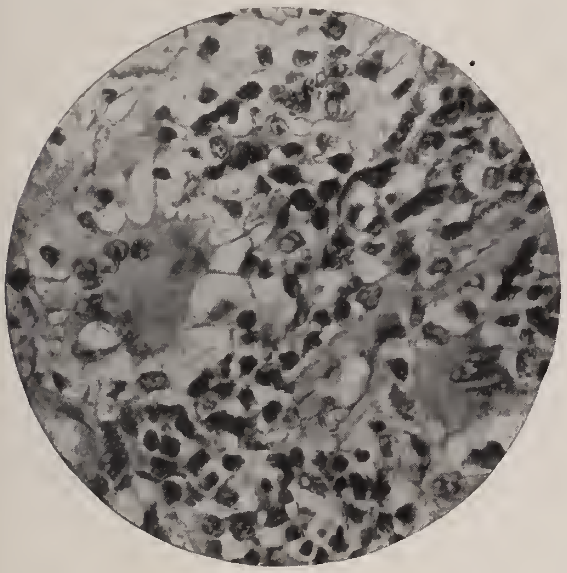

Fig. 2. Same. Magnification 560 diameters. Observe Leydig cels, giant cells and abundance of cell life in well nourished area.

of constancy in its results. In other words, that the graft could be made to "take" and generally be depended upon to produce the results which were occasionally noted as temporarily occurring after testicular transplantations. The fact that the grafts "took" at times and did not at others might be due to faulty technic or to an unsuitable site for the implantation of the graft or perhaps because of too great a degree of heterogeneity between the donor and recipient of the graft.

With this object in view I have for some years made a number of experimental and clinical investigations of testicular grafting, and in pursuit of the same I visited the clinics of Voronoff, in Paris, and of Steinach, in Vienna, to study their methods and results. In this paper I can only file a preliminary note of my personal findings in this field of surgery.

After some years of experimental work I have devised and adopted a new technic in treating and implanting the testicle which I call the "lantern" denudation method. I have found that this has given me almost perfect results as regard per primam healing and equally good results as regards the taking and vascularization of the graft.

The difficulty of obtaining human suitable material for testicular transformation is obvious. I was convinced that biologically there should be but little difference between the higher apes and man, and that clinically grafts from such animals to man ought to succeed. I am glad to be able to say that my anticipations in this respect were well founded, and that I have been able to successfully transplant testicles from the higher apes to man in a number of cases and to prove that such grafts became vascularized and functioned, producing exactly the same physical and psychosexual effects as those produced in man by the transplantation of human testicles when such were in any way successful.

The illustration shown is a reproduction of the microphotograph of a section of such a transplanted testicle. It shows degeneration of the seminiferous tubules, proliferation of the interstitial tissue and vascularizaton. The graft retained its full size. It is, as far as I know, the first histologic proof of the "taking" of a testicular graft from ape to man.

If my results are verified by the findings of other surgeons, the importance of the matter can scarcely be overestimated, as not alone for the testicle but for other transplantation it proves the possibility of successfully making use of free grafts from apes to man. In several such transplantations which I have carried out, where I have employed my lantern denudation technic, I have almost invariably obtained excellent results. The full details of my surgical technic and clinical findings in all cases will form the subject of a later complete article.

NEUROPATHIC DILATATION OF THE COLON WITH HYPERTROPHY

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Our knowledge of idiopathic dilatation of the colon, megalacolon or Hirschsprung's disease dates back about sixty years.

The chief reason for reporting this case of megalacolon is its rarity in the aged. Indeed, it is described as only "occurring in children and young adults" (Osler). It is often congenital and 80 per cent of patients are children.

The dilatation affects mostly the sigmoid, but may involve the whole colon or, rarely, the small intestine. There is compensatory hypertrophy with thickening of the gut so that it may form a non-collapsible tube a quarter inch thick and as much as six inches in diameter, looking something like a large-sized automobile tire.

The etiology is uncertain but the most probable is a neuropathic origin, as in cardiospasm, with a spasm below the affected segment and dilation above. Innervation of the colon is derived from hypogastric plexus with motor and inhibitory spinal and sacral fibres, while impulses may originate in the neuromuscular nodes in the gut itself. Whether the disordered innervation is one of paralysis of motor impulses or stimulation of inhibitory is unknown.

Clinically we may divide cases into four groups. First: The congenital in the newborn without fecal movements but with distention of the abdomen, autointoxication, inanition and, from upward pressure, dyspnea, cyanosis and respiratory failure. The treatment consists of dilation of the sphincter ani, abdominal massage and irrigation of the bowel.

Second: Cases occurring during weaning with chronic tympany, constipation and cachexia.

Third: Cases observed in males in late life with marked chronic tympany and constipation, often alternating with diarrhea.

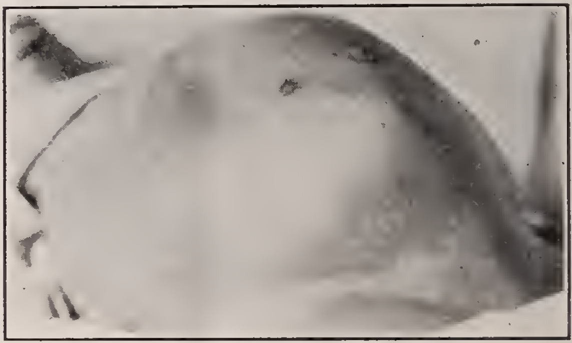
General Symptoms. Extraordinary tympanites without particular pain or tenderness, vomiting or muscle rigidity. Visible peristalsis and segments of intestines may sometime be observed. Due to pressure upwards on the diaphragm, there are often absence of liver dulness in front, displacement of the heart, dyspnea, together with cynaosis and marked distention of the lower belly.

Diagnosis. X-ray in knee-chest position after a barium enema is essential. Differentiation from partial obstruction by growth or volvulus of sigmoid is made by absence of pain, vomiting, and usually absence of visible peristalsis (not always), and passage of flatus and feces in megalocolon. From peritonitis the absence of causative history, vomiting, tenderness, rigidity, rapid pulse, facies, prostration and dulness in the flanks in megalocolon are the chief distinguishing points.

The *Prognosis* is bad without operation.

Treatment. Medical measures are ineffective except in mild cases. They include purges of castor and paraffine oil, rectal irrigations, use of rectal tube and abdominal massage.

Surgery is best carried out by a three step operation. First, the making of an artificial anus well above the dilated bowel; second, enteroanastomosis between the segements above and below the dilatation; third, resection of the dilated segment and closure of the colostomy opening.



Patient on back showing enormous abdomen in megalocolon.

REPORT OF CASE

Male, 68, January, 1922, King County Hospital. Entered with extreme distention of abdomen of a month's duration and diarrhea for same period. Two similar attacks in 1918, lasting a few days and relieved by rectal tube and irrigations. Patient denied chronic constipation. Previous history unimportant, except amputation of right arm in this hospital for infection in 1915.

Physical examination. Apex beat in third space within nipple line. Liver dulness absent except in axillary line, fourth to sixth spaces. Great abdominal distention with visible peristaltic waves occurring every few minutes, forming a central rounded, vertical ridge about six inches wide, with furrows either side, in the abdomen. The whole abdomen enormously distended and tympanitic but no pain, tenderness or rigidity.

Examination by finger and proctoscope discovers nothing but greatly dilated bowel. Slight edema of legs and cyanosis. No vomiting. Appetite fair. Cannot retain rectal tube, cathartics ineffective, Wassermann test negative. Examination of feces negative. No occult blood or parasites. Urine normal.

Medical treatment by rectal tube, enemata, pituitrin and cathartics of no avail and patient rapidly losing ground. X-ray of bowel very unsatisfactory as patient too weak to assume proper postures.

Probable diagnosis, megalacolon. Resection of enormously dilated (diameter six inches) and thickened sigmoid by Dr. Mason twenty days after admission. The dilatation extended as far as ascending colon. Patient came off the table in good condition but died two days later of pneumonia and fatty degeneration of the heart as shown by autopsy. No cause of the obstruction was found at operation or autopsy.

MULTIPLE AREAS OF PENETRATING COLITIS

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A married woman, aged 47, came to the office, May 23, 1922, complaining of nausea and severe pains in the right side of the abdomen. These came on suddenly, four days previously and since then she has slept little and eaten nothing but taken several purgatives.

Examination showed her to be an anemic woman, one child, aged 12, regular, and no miscarriages, tonsils suspicious, teeth bad, temperature 99, pulse 88, slight goiter, heart and chest negative, abdomen slightly distended, and the right side tender and rigid. The tenderness extended from the iliac crest to the costal margin and was most pronounced about the appendix region. No blood count was made at this time. Diagnosis of acute appendicitis and recommendation of immediate removal was given and refused.

She insisted on going home, sixteen miles, and was advised to go to bed, keep ice to her side, and to take no food or laxatives. Nothing was heard from her until the 26th, when her husband phoned that pain and nausea had increased. She was brought to the hospital that evening and examination revealed about the same conditions as previously noted. She was much exhausted from the trip and operation was deferred until the next morning. At this time her blood count showed leucocytes 21,000, polyneuclears 70, small lymphocytes 28, and eosinophiles 2. No Wassermann was made.

Operation, May 27. A right rectus incision was made under ether anesthesia. The appendix was small and quite normal but there was a marked peritonitis about the cecum and ascending colon The cecum was movable and no marked pathology noted. Following up the colon about half way to the hepatic angle, a very firm adhesion to the parietal peritoneum was found. The omentum was adherent and on separation presented a purplish thrombotic appearance, with grayish sloughy areas. No colonic odor was noted. The ulcerated area on the colon was about one-half inch wide by one and one-half inch long. When freed from the wall of the abdomen, it was quite movable and, at the suggestion of Dr. Lynch, was inverted with chronic mattress sutures. Another similar area on the opposite side of the colon and quite independent of the first was treated in a similar manner. The diseased portion of omentum was ligated and removed as was also the appendix. The gall-bladder was large, but emptied normally. Abdomen closed tight.

Convalescence. The first four days was quite stormy, suggestive of an acute dilatation of the stomach. Frequent gastric lavage cleared this up. Her temperature gradually dropped to normal and at the end of the first week she was taking small amounts of liquid nourishment. The incision healed without any disturbance and she was sent home on the nineteenth day, with instructions to remain in bed and have teeth and tonsils taken care of as soon as possible.

The interesting point of this case, of course, was the etiology. The surgical literature on the subject is very meager. That the infection came in the blood stream is almost certain, for the cecum and colon are so constantly associated with a large number of intestinal bacteria that they have acquired a strong immunity. In a recent report of three cases, Dr. Dickinson, of Jersey City, suggests that the presence in the large bowel of areas of adenoid tissue, very similar to the abundant adenoid tissue of the appendix, seems so prone to take up the circulating bacteria and of starting a local necrosis, that they may be responsible for these rather rare colonic ulcers. Rosenow shows that certain forms of bacteria injected into the blood stream cause ulceration of the colon, other forms cause ulceration in the acid stomach and others, again, in the alkaline small intestines. The suggestion is also made from necropsy observation that such ulceration in the cecum and colon may be in the form of a terminal infection, occurring in very toxic patients with low resistance.

This case is much too recent to feel secure, as nothing has yet been done to prevent a recurrence in other areas. The condition has been called a penetrating colitis, as all the coats of the bowel were involved and a perforation in one case was prevented by adhesion to the abdominal wall. The second area was quite free and probably would have perforated in the course of a few hours.

AMERICAN RED CROSS CHILD WELFARE PROGRAM IN POLAND*

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On undertaking a child health program in any country the choice of procedure lies in general in one of two directions. First, the setting up of a small number of model centers under the direct and continuous suprevision of American personnel, or, second, the setting up of a larger number of centers, utilizing native personnel to the fullest extent, and early placing the direction under local committees, using the American personnel in an organizing and supervising capacity. The economic conditions are such in Poland, except in a few communities, as to make impossible any assurance of the perpetuity of the centers under so expensive a plan as the former. So in Poland there have arisen under the supervision of the American Red Cross a surprising number of activities thruout the whole country, and at the same time in the larger cities of Warsaw, Wilno, Krakow and Lwow. in close affiliation with the universities and under the eyes of the strongest children's physicians in Poland, a few centers where intensive demonstration work is done by simple and proven methods.

The organization, thru which the American activities operating in Poland reach the child, is well worth a word of comment. Known all over Poland as the P. A. K. P. D., the Polish-American Committee for the Relief of Children was organized by the American Relief Administration for its feeding of children. The central committee at Warsaw is composed of various representatives from the ministries. The acting director is an American, detailed from the staff of the American Relief Administration. There are fourteen regional offices and in each of these regional areas are district offices with a committee and a full time manager; they in turn have a number of smaller precincts under their supervision. Thus every part of Poland is covered and, including both paid workers and volunteer committees, has a personnel of over 25,000. It was on this organization that the sanitary-medical division was created to distribute information concerning the program of the American Red Cross, to stimulate interest in it, and to act as shipping agents for all its supplies.

A child health program presupposes the existence of such fundamental institutions as the ambulatorium and the children's hospital for the care of the sick babies and children in its health centers. Six long years of war and the terrible suffering incident to reconstruction placed the American child health work in Poland in the position of creating these ordinary tools, which your infant health worker at home has right at his command.

In January of this year, less than one year after the program was changed from general relief to constructive child welfare, thirteen committees, or groups of committees, have organized and are maintaining as many children's hospitals with 390 beds, with equipment furnished by the American Red Cross, and 45 children's wards with an additional capacity of 576 beds have been put in general hospitals. Further, every existing children's hospital and children's sanitarium in Poland has been aided, tents and equipment for summer colonies of 1,900 children from tuberculous homes, and assistance in the organizing of 133 ambulatoria for infants and children represent some of the ground work on which, at any rate in practice if not in theory, the health center for advice, in Poland at least, must be built.

In the fifty-eight infant health centers the regional American doctors, nurses, and social workers act in a supervising capacity, the physician as the regional inspector. They are continually travelling, and after the requests for aid of this character are investigated and all preliminary arrangements are made for opening a health center, the nurse and social worker arrive. They remain in the community a sufficient length of time to organize the local sustaining committee and all the details incident to operating a health center. Classes are organized for the expectant mothers in the care of the well baby; consultations are held for the care of the sick and well babies; also for the child of "run about" age, and in some cases the child of school age. The nurse and social worker remain until the center is running satisfactorily and then pass on to another point, but usually revisit the activity at intervals of a few weeks, depending upon the necessity for close supervision. The doctor makes a complete round of activities in his territory once a month.

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* Dr. Manning is at present Associate Field Medical Director of the European Child Welfare Program of the American Red Cross. Paris, April 24, 1922.

To meet the need for trained Polish workers in the health centers a short course for health workers was established in Krakow in connection with the University clinic. Three American nurses and one social worker were detailed to supervise the course. The first group of thirty-five women had a four months' intensive training in Krakow and two months in the field under the supervision of American nurses. The result was so enthusiastically received all over Poland that a second class of thirty-six additional young women, under the Ministry of Health and the Polish Red Cross, are receiving a full six months intensive course at Krakow and will graduate April first to take their place in the health centers.

By agreement with the American Relief Administration, the American Red Cross has the supervision thru its infant stations of all relief feeding in Poland of children under three years of age. With this supervision the supplementary feedings of the American Relief Administration are then dispensed only on the order of the physician in the health center after examination and to meet the individual need.

To change from a program of general relief to one of child welfare, with emphasis on its constructive side, has been a difficult task in all these countries in which the Red Cross is operating. Anyone who has ever been in Baranowicze or Rowno, the two stations thru which pass thousnds of miserble refugees daily from Russia, can realize how great are the relief trials of Poland. Dr. Richard M. Taylor, the Commissioner of the American Red Cross for Poland, has splendidly met this trying situation. While giving relief as far as our resources would permit to the destitute children of today, he has carried out a constructive program of health seed planting for the infants and children yet to be born in Poland.

This inspiring program of health seed planting, however, is not without its sacrifices. The whole commission feels the personal irreparable loss to them of Dr. John Bernard Voor, of Louisville, Ky., Assistant Director, who died Feb. 14 of typhus contracted at Baranowicze. Dr. John P. Caffey, another physician of the commission who came down with typhus at the same time, is now convalescing after a long and serious illness.

How well the health idea in many instances has been grasped by the Polish people is illustrated, if I may be permitted to refer to it, in my report to the Commissioner to Poland of Feb. 27 on the Warsaw Stations. "Thru the tactful contact with your doctors, ncrses, and social workers the Polish doctors and nurses have adapted themselves, in the face of necessity for relief in almost every individual infant, to the general constructive principles of the program. This has resulted in the registration of a surprising number of home visits and well breast-fed babies. Altho it may indicate the desire of a large number of mothers for layettes, it clearly indicates that the Polish doctors and nurses are encouraging breast feeding. For example, at Pulaska station, of 200 babies registered 103 are breast-fed; at Mlynarska station, of 204 babies registered, 141 are breast-fed; and at the Jerozolimska station, of 195 registered babies, 136 are breast-fed. Home visits in these stations were 188, 204 and 170 respectively."

The work in Poland has been supported by a strong publicity department, one feature of which is the traveling health cinema unit, operated jointly by the American Red Cross and the League of Red Cross Societies. The perpetuity of a large part of the health centers is now assured. The Ministry of Finance has signed an agreement with the American Red Cross providing for a subsidy of the present program by the Polish Government, to the extent of $275,000 to be paid in eleven equal instalments over a period of five and a half years. This will not only carry the present program, but even permit of its further development.

Observations on Fractures of the Mandible.—Thirty-one cases of fracture of the mandible are analyzed by Robert H. Ivy, Philalelphia (Journal A. M. A., July 22, 1922). There were nineteen cases of single fracture and twelve of double, making a total of forty-three fractures in all. The location was: mental foramen region, sixteen, or 37.2 per cent.; angle, eleven, or 25.6 per cent; incisor region, eight, or 18.6 per cent; molar region, six, or 14 per cent.; neck of condyle, two, or 4.6 per cent. Thirty-two fractures were in the vicinity of the teeth. In seven cases, or 22.5 per cent, external drainage was required on account of suppuration. The same number developed sequestrums requiring removal either intra-orally or extra-orily.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington, Idaho and Utah
Devoted to the Interests of the Medical Profession of the Pacific Northwest
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AUGUST, 1922

EDITORIAL

ACTIVITIES OF THE AMERICAN MEDICAL ASSOCIATION

Every physician is aware that the American Medical Association is engaged in many lines of work of great value to the medical profession and bearing on the welfare of the people of the nation. One cannot thoroly appreciate the diversity of these various lines of endeavor except by a personal visit to the headquarters of the association in Chicago. At the outset one is impressed by the magnitude of the physical task involved in publishing more than 80,000 copies per week of the greatest medical journal in the world, as well as issuing numerous monthly publications. Inspection of the groups of linotypes, printing presses and other machinery at their daily tasks is a sight which one will long remember. Here one sees in action one of the great publishing establishments of the country.

The Department of Education, administered by Dr. Colwell, is replete with matters of interest. It is impressive to note the part this department has played in elevating the standard of medical education during the last decade. Here one can find complete data concerning all of the medical institutions in the world. A very interesting feature is observed in the files containing information regarding members of the medical profession. It is a little startling to have a file inspected, containing one's own medical pedigree and to note that a record of one's professional career can here be discovered. Every physician in the United States is included here, together with important events of his past life. The graduates of every medical school in this country and of Europe are listed in this department. No longer is it possible for a practitioner to masquerade as a graduate of a medical institution in this or any other country, with which he has had no profesisonal relations. The facts concerning him can be ascertained by reference to these records.

The Department of Propaganda for Reform, under the supervision of Dr. Cramp, is constantly busy in the effort to segregate truth from falsehood in medical advertisements and to expose the fakir among those who practice the healing art. All attempts at quackery and medical imposition, which have been run down and published to the world, are here on file in all their details. One is reminded of some of the features of the traditional detective story in noting the methods of detection and exposure of some of these successful efforts to impose on the great American public. The work of the Council on Pharmacy and Chemistry, under the supervision of Prof. Puckner, is along the same line of suppressing fraud and sustaining honorable procedure in pharmacy and chemistry. It has accomplished remarkable results in exposing quack medicines and various patented preparations which are realized by only a few of the medical profession and have been accorded inadequate appreciation by the public at large. The ingenious methods devised for the analysis of certain involved preparations are of special interest to one familiar with the science of pharmacology. So effective have become these measures of the American Medical Association in the detection of fraud, in the methods proposed for the treatment of disease that the impostor and fakir is having a difficult time to accomplish results and he has good reason to stand in fear of these sleepless workers. Every member of the medical profession should take pride in the effective work which is being accomplished by our great organization in helping to make medicine constantly a more efficient agency in promoting the welfare of the people of the land.

GERMAN DRUG MONOPOLY

Much has been written in the past concerning the German domination of drugs, which has probably been brought to the attention of all our readers, yet it seems desirable once more to present this subject. It is a well known fact that before the war Germany had a monopoly on the manufacture of a large number of drugs of every day use, as well as the production of dye stuffs. When it became impossible longer to obtain these drugs after the entrance of United States into the war, the government licensed certain American firms to manufacture them. Owing to the fact that the German patents in many instances did not contain the true formulae, much intensive investigation was necessary before these drugs could be properly produced. Now, when the business of the firms has become thoroly established and they are effective, going concerns, it is announced that Congress has lifted the embargo on German importations of these products and it is likely that a suitable tariff will not be imposed to permit the existence of our own drug manufacturing establishments.

The immediate interest of the individual physician in this matter as well as that of the general public lies in the fact that, while the German monopoly existed, the manufacturers were enabled to charge exorbitant prices for these foreign productions. Every physician remembers the material reduction in price which followed the introduction of the American made products after the principles envolved in their manufacture were perfected. Our American people will not be willing to stand for the elimination of well established manufacturing industries for the production of drugs and dye stuffs as well as the increased prices for the same, which will follow in due time, if these industries are ruined by the introduction of low priced goods manufactured in Germany. Here should be food for thought and action on the part of every American physician.

WASHINGTON ASSOCIATION MEETING AT TACOMA

The annual meeting of Washington State Medical Association will be held at Tacoma Sept. 6-7. A cordial invitation is extended to the profession of adjacent states to attend this meeting. A large attendance is anticipated from the membership of the association. This meeting will be folowed by the sectional meeting of the American College of Surgeons, Sept. 8-9.

An almost unanimous feeling has become prevalent in Washington regarding the form of entertainment that has been offered by the different county medical societies. The expense of this entertainment is such as to make it almost prohibitive, except for the larger county societies. This year Pierce County Medical Society will inaugurate a plan of offering no social entertainments, except that it will arrange for a banquet, for which each visitor will be expected to pay his proportionate expense. Thursday evening, Sept. 7, at 6.30 p.m., there will be a banquet at the Tacoma hotel. Members on registering will be asked to contribute $2.50 per plate. Luncheon will be served each day and a charge of fifty cents will be made for those wishing to avail themselves of this opportunity.

A public meeting will be held at the Scottish Rite Cathedral, Wednesday evening, Sept. 6, at 8 p.m. The program will be given by the chairmen of the standing committees of the State Association and the public will be invited to listen to the reports as they are presented, the idea being that at least once a year the people should be authentically informed upon matters of public interest. Progress has been made along such subjects as venereal prophylaxis, conservation of vision, hospital standardization and survey, health problems in public school education, public health, public health league. This year it is hoped that some plan may be worked out in the House of Delegates, whereby the medical profession, thru its state organizations, may weave into closer relationship the many diversified interests of its members and assume a directing leadership in matters that pertain to the public health.

PROGRAM

WEDNESDAY, SEPT. 6

9 a.m.

House of Delegates

10 a.m.

Extrarenal and Ureteral Pathology Causing Renal Symptoms—Dr. R. F. Hain, Seattle.

Discussion—Dr. C. S. Pascoe, Tacoma; Dr. F. H. Brush, Yakima.

Renal Infections—Dr. Joseph Walker, Tacoma.

Discussion—Dr. A. H. Peacock, Seattle; Dr. H. S. Argue, Tacoma; Dr. Alvid Anderson, Hoquiam.

Associated Alkaptonuria or Orthostatic Albuminuria—Dr. G. H. Anderson, Spokane.

Discussion—Dr. J. R. Brown, Tacoma.

2 p.m.

Fracture Dislocation of the Cervical Vertebrae—Dr. Mitchell Langworthy, Spokane.

Discussion—Dr. Chas. Hunter, Tacoma; Dr. R. D. Forbes, Seattle.

Pain in and Referred from the Sacroiliac Joint—Dr. S. G. Brooks, Anacortes.

Discussion—Dr. E. A. Rich, Tacoma; Dr. M. G. Lyle, Seattle.

Permanent Repair by Open Operation of Congenital Dislocation of the Hip (Moving Picture Demonstration)—Dr. Edward A. Rich, Tacoma.

8 p.m.

Public meeting. General Health Topics and Reports of State Committees.

Tuberculosis—Dr. Christian Quevli, Tacoma.

Venereal Prophylaxis—Dr. C. S. Pascoe, Tacoma.

Conservation of Vision—Dr. W. F. Hoffman, Seattle.

Hospital Standardization and Survey—Dr. G. W. Swift, Seattle.

Health Problems in Public School Education—Dr. W. N. Karshner, Puyallup.

Public Health—Dr. J. R. Brown, Tacoma.

Public Health League—J. W. Gilbert, Seattle.

THURSDAY, SEPT. 7

9 a.m.

House of Delegates

10 a.m.

Duodenal Ulcers (x-ray)—Dr. M. F. Dwyer, Seattle.

Discussion—Dr. J. A. Snively, Seattle; Dr. V. E. Crow, Tacoma.

Deep Roentgen Therapy—Dr. C. B. Ward, Spokane.

Discussion—Dr. F. S. Bourns, Seattle; Dr. C. R. Fishel, Tacoma.

Adult Type Tuberculosis in Children—Dr. C. R. Castlen, Seattle.

Discussion—Dr. R. J. Cary, Elma.

2 p.m.

End Results of Appendectomy in Cases Clinically Diagnosed as Chronic Appendicitis—Dr. J. F. Cowan, San Francisco.

Discussion—Dr. J. B. Eagleson, Seattle; Dr. A. A. Matthews, Spokane.

Eugenics and Heredity—Dr. J. W. Snoke, Tacoma.

Discussion—Dr. D. A. Nicholson, Seattle.

The Relation of the Health Department to the Private Physician—Dr. P. A. Turner, State Director of Health, Seattle.

Discussion—Dr. Chas. Engles, Tacoma.

EXTRACTS FROM BY-LAWS

"Except by special vote the order of exercises, papers and discussions as set forth in the official program, shall be followed from day to day until it has been completed.

"No address or paper read before the Association, except those of the President and invited guests, shall occupy more than twenty minutes in its delivery, and no member shall speak longer than five minutes or more than once on any subject. No more than three papers or scientific addresses shall be placed upon the program for any daily session or section.

"All papers read before this Association shall be its property and each paper shall be deposited with the Secretary-Treasurer when read. Papers read by title shall be treated as if actually read before this Association."

UTAH ASSOCIATION MEETING

The twenty-eighth annual meeting of the Utah State Medical Association will be held at Salt Lake City, Aug. 31, Sept. 1 and 2. The sessions are scheduled to be held at the University of Utah.

PROGRAM

THURSDAY, AUG. 31

8-11 a.m.

CLINICS

St. Marks Hospital—Dr. Geo. A. Kalb, Monrovia, Cal.

L. D. S. Hospital—Dr. Henry Schmitz, Chicago.

Holy Cross Hospital—Dr. Carl A. Hedblom, Rochester, Minn.

10.30—Meeting of the Council at University Club.

11.00—Meeting of the House of Delegates at University Club.

12.30—Luncheon for the House of Delegates at University Club.

2 p.m.

President's Address—Dr. A. C. Behle, Salt Lake.

An Official Talk as Trustee of American Medical Association on Association Matters—Dr. Wm. T. Williamson, Portland.

Discussion by Dr. S. C. Baldwin, Salt Lake; Dr. Henry Schmitz, Chicago; Dr. R. R. Hampton, Salt Lake; Dr. E. G. Hughes, Provo.

The Clinical and Radiological Aspects of Cancer of the Uterus with Reference to Radium and X-ray Therapy (Lantern Slides)—Dr. Henry Schmitz, Chicago.

Discussion by Dr. A. A. Kerr, Salt Lake; Dr. H. P. Kirtley, Salt Lake; Dr. G. W. Middleton, Salt Lake.

Diagnosis of Surgical Kidney (X-ray plates or lantern slides)—Dr. W. H. Budge, Logan.

Discussion by Dr. W. G. Schulte, Salt Lake; Dr. Mark Brown, Ogden.

Annual Banquet—Hotel Utah, 7.30.

FRIDAY, SEPT. 1

9 a.m.

Heliotherapy—Dr. Geo. A. Kalb, Monrovia, Cal.

Discussion by Dr. W. R. Tyndale, Salt Lake; Dr. W. S. Keyting, Salt Lake; Dr. W. R. Calderwood, Salt Lake.

Treatment of Pneumonia—Dr. Harlow Brooks, New York.

Discussion by Dr. G. G. Richards, Salt Lake; Dr. T. C. Gibson, Salt Lake; Dr. G. F. Roberts, Salt Lake.

The Relationship Between the Clinical Laboratory and the Physician—Dr. T. A. Flood, Salt Lake.

Discussion by Dr. C. L. Shields, Salt Lake; Dr. L. H. Robison, Magna; L. L. Daines, Ph.D., University of Utah.

The Histological Study of Irradiated Uterine Carcinoma (Lantern Slides)—Dr. Henry Schmitz, Chicago.

Discussion by Dr. T. A. Flood, Salt Lake; Dr. F. W. Taylor, Provo; Dr. L. S. Merrill, Ogden.

12.30—Meeting of the House of Delegates.

2 p.m.

Recent Progress in the Treatment of Empyema—Dr. Carl A. Hedblom, Rochester, Minn.

Discussion by Dr. W. N. Pugh, Salt Lake; Dr. R. T. Richards, Salt Lake; Dr. E. C. Rich, Ogden.

Treatment of Gonorrheal Infections of the Uterine Tubes—Dr. Henry Schmitz, Chicago.

Discussion by Dr. E. I. Rich, Ogden; Dr. C. E. McDermid, Castle Gate; Dr. W. E. Hunter, Salt Lake.

Cooperation or Competition with the Country Doctor, a Lesson from Experience—Dr. Homer E. Rich, Vernal.

Discussion by Dr. S. H. Allen, Salt Lake; Dr. M. J. MacFarlane, Cedar City; Dr. C. H. Jensen, Tremonton.

Economics of Treatment—Dr. E. G. Hughes, Provo.

Discussion by Dr. H. B. Sprague, Salt Lake; Dr. T. B. Budge, Logan; Dr. L. J. Paul, Salt Lake.

8 p.m.

Thoracic Signs of Abdominal Disease—Dr. Harlow Brooks, New York.

Discussion by Dr. J. F. Sharp, Salt Lake; Dr.

W. R. Tyndale, Salt Lake; Dr. W. L. Lindsay, Salt Lake.

Graded Thoracoplasty for Chronic Pulmonary Suppuration with Special Reference to Bronchiectasis—Dr. Carl A. Hedblom, Rochester, Minn.

Discussion by Dr. J. E. Tyree, Salt Lake; Dr. Wm. T. Ward, Salt Lake; Dr. J. C. Landenberger, Salt Lake.

SATURDAY, SEPT. 2
8.30 a.m.

Meeting of the House of Delegates at University of Utah.

9 a.m.

Mental Hygiene—Dr. Wm. T. Williamson, Portland.

Discussion—Dr. Fred Dunn, Provo; Dr. Samuel Woolfe, Salt Lake; Dr. G. N. Curtis, Salt Lake.

Hemorrhagic Diseases of Early Life—Dr. Eugene H. Smith, Ogden.

Discussion by Dr. Helmina Jeidell, Salt Lake; Dr. H. R. McGee, Logan; Dr. W. L. Felt, Salt Lake.

2 p.m.

Artificial Pneumothorax—Dr. Geo. B. Kalb, Monrovia, Cal.

Discussion by Dr. M. M. Critchlow, Salt Lake; Dr. R. S. Allison, Salt Lake; Dr. J. J. Galligan, Salt Lake.

Certain Phases of Angina Pectoris—Dr. Harlow Brooks, New York.

Discussion by Dr. C. Snow, Salt Lake; Dr. D. L. Barnard, Salt Lake; Dr. R. T. Jellison, Salt Lake.

Meeting of the Council.

Adjourn to Saltair.

OREGON STATE MEETING

The annual meeting of the Oregon State Medical Association will be held Oct. 28 and 29. This time will conform with the dates of the public health exposition which is to be given by the Oregon State Board of Health. This is arranged for and will be managed by the national committee which has held other state expositions with great success. For instance in Milwaukee, Wis., the attendance at such meetings was nearly 175,000. The exposition will be held in the Public Auditorium which is large enough to contain all the exhibits. The program of the medical meeting will include a number of outside men. It will provide, one morning at least, for a number of diagnostic clinics. The full program for the meeting will appear in our September issue.

IDAHO ANNUAL MEETING

"One of the largest and most successful and hope to go again" was acclaimed by all who attended the thirtieth annual meeting of the Idaho State Association at Wallace, July 10-11. Quite a number took advantage of the convenient schedule, which followed the Pacific Northwest session. The route from Spokane takes one over the Yellowstone Trail thru the beautiful Coeur d'Alene country and the wonderful Fourth of July Canyon.

A variety of special subjects with short and spirited discussions marked the interest taken in the scientific program, which was completed within the time allowed. The first evening was devoted to a public meeting under the auspices of the association, cooperating with the American Society for the Control of Cancer, the Antituberculosis League and the recently formed Idaho State League for the Conservation of Public Health. Lay interest was distinctly manifested by the large attendance. Special features of entertainment were visits to the Bunker Hill-Sullivan mines and smelter in Kellogg and the Hecla mine in Burke. The officials at these different mines provided luncheon and gave detailed instruction as to their modern facilities used in mining and refining lead and silver. On the evening of the last day the members of the local profession and the Wallace Board of Trade acted as hosts at the annual banquet.

ENLARGED ISSUE FOR THE SPOKANE MEETING

It was planned to publish an enlarged issue of NORTHWEST MEDICINE for August to include the papers and addresses presented at the Spokane meeting. After partially preparing the material it was found impossible to assemble all of it for publication at this time. Accordingly it was decided to set aside the September issue for this purpose. It is expected that all of this material will be published at this time, thus forming a report in one volume of this memorable medical meeting.

MEDICAL NOTES

OREGON

Eastern Oregon District Medical Society held its annual meeting at Baker, July 19. It was well attended by physicians from the Eastern part of the state. Papers and addresses were presented by Drs. Ray Matson, Lyle Kingery, R. C. Coffey and J. G. Strohm, of Portland. A successful meeting was reported.

Verdict Appealed. Seven doctors in Oregon City, who were recently prosecuted for libel by

Dr. H. S. Mount, received a verdict to pay a judgement of $20,000. Last month an appeal was filed against this decision. The judgment asked for in the case was for $50,000.

Physician Injured. Last month Dr. J. K. Locke, of Portland, was injured by the overturning of his automobile on the Columbia River Highway. He sustained a broken arm and bruises about the head.

Dr. L. O. Clement, formerly of Grants Pass, has located for practice at Salem.

Medical Weddings. Dr. William Kuydendall, of Eugene, was married July 19 to Miss Mary Rowland of the same city. Dr. Phillip Newmeyer, of Salem, was married July 13, at San Francisco to Miss Ruth Johns, formerly of Salem, but of late a resident of Manila.

WASHINGTON

New Medical Society Organized. At the meeting last month at Spokane the Pacific Northwest Medical Association received a permanent organization with a membership composed of physicians from the Pacific Northwest and the Provinces of Canada. The following officers were elected for the ensuing year: Pres., Dr. J. E. Else, Portland; Pres.-Elect for 1924, Dr. H. D. Dudley, Seattle; 1st and 2nd Vice Pres., Dr. A. S. Monro, Vancouver, and Dr. J. E. Tyree, Salt Lake City; Sec'y. Treas., Dr. Frederick Epplen, Spokane. Meetings will be held annually, that of next year being scheduled for Seattle.

Practitioners Licensed. Last month the Department of Licenses, at Olympia, granted medical licenses to forty-two applicants. The four following were licensed as result of examination: O. R. Frasch, Seattle; C. A. Meyer, Longmire; R. H. Somers, Seattle; K. J. May, Spokane. The following thirty-eight were licensed by reciprocity: H. L. Botts, H. Carothers and W. B. Cook, Seattle; W. J. Stark, A. Otteraen and W. T. Brown, Spokane; C. F. McCusky, Kenniwick; Pearl H. Brown, Port Angeles; D. S. Capron, Yakima; S. E. Lynch, Tacoma; E. R. Wilson, Bellingham; H. A. Barner, Bremerton; W. G. Cowan, Walla Walla; G. M. Cultra, Dayton; F. A. Decker, Casland; R. G. Eaton, Medical Lake.

New Hospital Occupied. Last month the new St. Anthony's Hospital, of Wenatchee, was opened for the reception of patients. Furnishings and equipment were removed into this hospital from the Wenatchee General. The building has been under construction for the past year and has cost in the neighborhood of $150,000.

Sanitarium Burned. On July 18 the Sound View Sanitarium, of West Seattle, was destroyed by fire. The supposition is that the fire was incendiary, the result of a long and bitter controversy between the proprietors and the neighbors who objected to the presence of the institution. The building was a total loss.

Addition to Hospital Staff. Last month Dr. D. E. Monroe was added to the medical force of the Veterans Hospital at Walla Walla. He has been a specialist in tuberculosis and diseases of the heart at Fort Lyons.

Starvation Specialist Excluded. Ten years ago Mrs. Linda Hazzard, who treated the sick in Seattle, received much publicity during a trial for manslaughter. She was a so-called fasting specialist, under whose treatment a patient died of starvation. She was sentenced to a term in the penitentiary. A few years later she was pardoned on the condition that she would not return to the state. Gov. Hart has reecntly refused to open the question on her request that she might return for practice as an osteopath.

New Trial Granted. Last month Drs. C. A. Reimcke and William Munsell, of Yakima, were granted a new trial in a malpractice suit in which the plaintiff was granted a judgement of $5,000.

Dr. G. G. Espe, formerly of Southern Idaho, has located for practice at Elk.

Medical Weddings. Dr. William K. Turner and Dr. Frederica Phillips, of Seattle, were married July 1. Both of the doctors have practiced in Seattle for a number of years. Dr. Kenneth Vaughan. of Yakima, was married to Miss Esther Dollenbacher, of the same city, on July 26. Dr. Douglas Capron, of Yakima, was married July 12 to Miss Grace Chapman of Red Falls, Minn., at the latter city.

IDAHO

New Officers Elected. At a meeting of the Idaho State Medical Association, held at Boise last month, the following officers were elected for the ensuing year: Pres., J. R. Gray, St. Anthony; Vice Pres., F. A. Pittenger, Boise; Sec'y. Treas., E. E. Laubaugh, Boise. The meeting next year will be held at Idaho Falls.

Dr. W. P. Habel has located for practice at Lapwai. During the pastt wo years he has been physician at the Indian Agency at Tulalip, Wn.

Dr. W. F. McDill, who has practiced for a number of years at McCammon, has located for practice at Rock Springs, Wyo.

Dr. R. M. Jackson, of Blackfoot, located for practice last month at Le Clede.

OBITUARIES

Dr. Henry Green, of Yakima, Wash., died July 10 at the age of 99. He was born in Dewar, England, while his parents were in that country on a visit. He was educated in Baltimore, where he graduated from the department of law. Later he studied at Glasgow and then went to Cape Town, Africa. His medical education was obtained from Orian Medical School of that city. He served as assistant surgeon in the English navy for two years. In 1858 he returned to the United States and located at Charleston, S.C. During the civil war he served as surgeon in the

Confederate army. Then he settled at Marshalltown, Iowa, later practicing in Kansas. In 1876 he moved to California and later to Oregon, living near Albany. He served as a member of the Oregon legislature. In 1879 he moved to Goldendale, Wash. Later he moved to Centralia and for a time practiced at Tacoma. In 1895 he moved to Yakima where he built the first brick house in that city. He practiced for a number of years in that part of the state.

Dr. O. N. Scllivan, of South Bend, Wash., died July 9. He was riding with a party of friends in any automobile, when his friends, supposing him asleep in the rear seat, discovered that he was dead, death resulting from disease of the heart.

Dr. Christian Stafrin, of Portland, Ore., died suddenly July 7. He was born in Nebraska and came to Oregon in 1907. At the time of his death he was president of the University of Oregon Medical School Alumni Association.

Dr. George E. Hyde, who practiced for many years at Idaho Falls, Ida., died at Salt Lake City, June 23. He practiced for a number of years at Rexburg. At one time he was in charge of the Idaho State Mental Hospital at Blackfoot. At the time of his death he was superintendent of the State Hospital for the Insane at Provo, Utah.

CONSULTATION BY CORRESPONDENCE

The Division of Venereal Diseases of the United States Public Health Service has arranged with several prominent syphilographers and genito-urinary surgeons, whereby the advice and counsel of these authorities is to be made available to general practitioners. The plan is referred to as "Consultation by Correspondence."

The method of utilizing this service is for private practitioners who have under their care any cases of venereal infection which they wish to describe to a specialist and ask for advice in regard to treatment or to the method of procedure in handling the case, to send to the State Board of Health a letter setting forth all of the data which they wish brought to the attention of the proper specialists. These letters will be forwarded to the Public Health Service who in turn will secure an answer to the communication from the best known specialist on the particular phase of the subject discussed in the communication from the private practitioner. It is believed that this sort of correspondence between private physicians and well known specialists will be of material benefit in many cases. This service is, of course, entirely free of charge.

BOOK REVIEWS

Edited by Kenelm Winslow, M.D.

The Practice of Medicine. By A. A. Stevens, M.D., Professor of Applied Therapeutics in the University of Pennsylvania; Professor of Therapeutics and Clinical Medicine in the Clinical Medicine in the Woman's Medical College of Pennsylvania. Octavo of 1106 pages. Philadelphia and London: W. B. Saunders Company, 1922. Cloth, $7.50 net.

Dr. Stevens is known by an admirable manual of medicine which has long been used by students in cramming for examinations. There should be some very good reason for putting forth a new text-book on theory and practice after the incomparable classic of Osler and other standard and wholly acceptable works on the subject. Of course such a book implies an enormous amount of industry on the part of the writer, as well as ability, experience and facility of expression. It would indeed be deplorable if such a magnum opus, such ability and such endeavor should not prove worth while. Certain textbooks on practice excel in special qualities. Osler is sui generis and has never been surpassed or equaled. He had a happy combination of literary and professional ability and uncommon sense. Also he possessed the power of reducing a subject to its lowest terms and expressing himself in vivid and picturesque language. His aphorisms remain indelibly fixed in the mind of the reader. Not mere ability can produce a successful textbook. Reginald Fitz and Horatio Wood were shining lights in their day, yet their joint progeny on practice was almost still born, and never resuscitated. Some books on practice are especially valuable in statistics, as Edwards. Any book that is thoroly up to date possesses value. How much depends upon the ability of the author to separate the wheat from the chaff. This lengthy preamble brings us to the worth of this new Practice, of Stevens. It is up to date In the best sense of the word, that is safe, sound and sapient. In the most difficult of all subjects to evaluate—diseases of ductless glands—the writer emerges unscathed from the welter of wisdom emitted by countless mediocrities and sticks to the few basis facts and disorders that we really know. Very few new facts have been adduced since the description of Frohlich's disease, and Mazfieldt's work in proving the pituitary origin of some cases of diabetes insipidus.

Under the diagnosis of phthisis Stevens states that "the disease almost always begins near the apex of the lung and then gradually spreads downward." This is clinically but not chronologically correct. Tuberculosis of the lungs always begins in childhood at the hilus and twenty years later may be discovered as "incipient tuberclosis" at the apex. It is time this fallacy of tuberculosis beginning at the apex be stopped. It is true, however, that the apex is the point where pulmonary tuberculosis is first clinically evident in most cases. The book is the result of enormous labor and well worth while in its progressively conservative presentation of a vast and ever changing subject. WINSLOW.

Bacteriology, General Pathological, Intestinal. By Arthur T. Kendall, B.S., Ph.D., Dr. P. H. Professor Bacteriology Northwestern Univ. Medical School, etc. Second elition. Illustrated. 680 pp. $6.00. Lea & Febiger, Philadelphia and New York. 1921.

This author first directs attention to the influence of the Great War on the science of bacteriology. This is manifested in marked improvements in methods of investigation and in modifications of preexisting views in the fields of infection and prevention of many diseases. It also has lead to a complete revision of some of the important bacterial groups. In order to accommodate these changes entire sections of this book have been rewritten. Not the least helpful are the references to extensive monographs on certain important subjects.

The arrangement of subjects follows the usual, but one notes a tendency to group like organisms, which simplifies and improves the work. The section on filterable viruses, including poliomyelitis, encephalitis lethargica and trench fever, as it does, is especially interesting. The author's diction, the type, spacing and illustrations of the publishers, alike, are worthy of the highest commendation. WEST.

Diseases of the Stomach and Upper Alimentary Tract. By Anthony Bassler, M.D., F.A.C.P. Professor of Gastro-Enterology, New York Polyclinic Medical School and Hospital, etc. Fifth edition, revised and enlarged. Fully illustrated. Cloth, 975 pp. $8.00. F. A. Davis and Co., Philadelphia. 1922.

The popularity of this well known work is evinced by its fifth revised and enlarged edition. Much new matter has been added in respect to x-ray examination and fractional test methods of gastric analysis, and in regard to new modes of examination of the stomach contents. Additions have also been made in connection with duodenal and rectal feeding. There is no work which is more detailed and exhaustive in its description of all methods pertaining to examination and expression of gastric contents. The author has a special method of withdrawing stomach contents with an ordinary stomach tube but the reviewer finds that the duodenal tube is taken to so much more kindly than the large sized stomach tube by the patient that he has discarded the ordinary stomach tube for several years. It seems sometimes as tho the very number and elaboration of methods and tests employed by gastroenterologists defeated the end, the making of a correct diagnosis. However this may be Bassler's book certainly overlooks none of the newer diagnostic means, and no book is more useful in supplying all the details essential in carrying out all tests and chemical examinations necessary for gastric analysis. The sections on treatment are equally painstaking and, for the general practitioner, the book is to be highly commended.

WINSLOW.

The Writing of Medical Papers. By Maud H. Mellish, editor of the Mayo Clinic Publications. 12mo. of 157 pages. Philadelphia and London: W. B. Saunders Company, 1922. Cloth, $1.50 net.

As intimated by the author, many successful physicians are deficient in knowledge as to the principles of grammatical and rhetorical forms esesntial to the writing of medical papers. This little volume presents a great deal of information which will be helped to any prospective writer who will take the time to read it. Emphasis is placed on the advantage of a large vocabulary of words. Chapters appear on the subjects of italics, punctuation, arrangement and outline and construction of papers. The chapter on the puzzling subject of punctuation itself justifies the existence of the book. It is wisely stated that "a paper should be brief and clear, demanding only enough of the time and patience of the reader to permit the presentation to him of the essential points." "The end of a paper should if possible reach the climax of the article and then end, leaving a sense of completeness and not redundancy in the mind of the reader." The book is one to be commended. SMITH.

The Eighteenth Amendment and the Part Played by Organized Medicine. By Charles Tabor Stout. 216 pp. $1.50. Mitchell Kinnerley, New York. 1922.

The purpose of this book is to prove the absurdity and the impracticability of the prohibition law as it exists in the United States. The bias of the author is expressed in the statement, "There is but one excuse for prohibition and that is the ignorance displayed by our medical authorities, real or assumed." He states that the prohibition act was originated and passed thru the influence of the American Medical Association, life insurance companies and the Standard Oil Company. The American Medical Association presents an example of "medievalism struggling against the advance of civilization." It seems that the medical profession, having lost out in the conflict with modern cults, turned to the new issue to gain popular favor and supported the hydra-headed monster, prohibition. The author claims that when the biased, inefficient men are removed from our national health departments, the fact will be recognized that alcohol is necessary both as food and medicine to sustain human life. He traces the use of alcohol thru the history of antiquity to the present day to prove its necessity. If one is in search of arguments to con-

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demn the Volstead Act he will find it in this volume.
SMITH.

Nutrition and Specific Therapy. By Dorothy E. Lane, S. B. 185 pp. The Macmillan Company, New York. 1922.

This volume presents in a convenient and practical form information on diet and nutrition as applicable to both adults and children. After treating the general subject of nutrition and food preparation the author discusses various phases of diet in its relation to intestinal disturbances and nutrition. An interesting argument is presented in favor of vegetarian versus meat diet. It is stated that three-fourths of mankind in all known periods have been practically vegetarian. Many instances are cited, showing the differences in the nature and development of peoples reared respectively on the two kinds of diet. It is stated that a high protein diet is responsible for many common diseases of today. The author is forced to conclude that a meat diet is against the rules of health for adults and is particularly counterindicated for young children. After discussing the bacteriology of the digestive tract the conclusion is reached that the diet should be regulated so that the acid forming bacteria predominate. The chapter on vitamines enumerates diseases induced by the absence of different members of this group. The book is well worth reading by any one interested in the subject of nutrition.
SMITH.

The Medical Clinics of North America. (Issued serially, one every other month). Volume V. Number V., March, 1922. By Boston Internists. Octavo of 335 pages, with 62 illustrations. Per clinic year (July, 1921, to May, 1922). Paper. $12.00 net; cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company.

Christian enunciates his now familiar dictum that digitalis is as useful in heart decompensation with regular rhythm and normal rate or near normal rate, as in rapid and irregular hearts. He shows that all the symptoms of decompensation as dyspnea, cyanosis, edema, ascites, engorgement of the liver, etc., are usually benefitted more successfully by digitalis than by any other drug, even tho the rate of the heart be not rapid nor arrhythmic. This is in diametric opposition to his fellow editor (and supreme heart specialist) Sir William Mackensie in Oxford Medicine. Mackensie states that the therapeutic effect of digitalis is "chiefly limited to slowing of the heart's rate," and "in every instance where I got a good result from (digitalis), it was accompanied by a diminution of the heart's rate." Again, "we find that the great majority of these results occur in one condition, auricular fibrillation, or its allied condition, auricular flutter." But Christian affirms that "digitalis is fully as effective in the treatment of chronic cardiac cases without auricular fibrillation as in those with auricular fibrillation. Even when the heart rate is slow, striking digitalis effects may be produced whether fbrillation is present or not." And Christian presents many heart studies to prove his affirmation is correct.

White, in this Boston number, also adduces many interesting heart cases. Robey emphasized the well known fact that fatal angina pectoris often occurs in patients with no sign of cardiac disability and that the symptom of precordial pain in middle aged and aged persons should be sufficient evidence to establish a diagnosis. This number, as always, teems with valuable articles which lack of space does not permit us to mention.
WINSLOW.

The Medical Clinics of North America. (Issued serially, one number every other month). Volume V., Number VI., May, 1922. By Chicago Internists. Octavo of 308 pp. and index to Volume V. complete with 22 illustrations. Per clinic year (July, 1921, to May, 1922). Paper $12.00; Cloth, $16.00 net. Philadelphia and London: W. B. Saunders Company.

This Chicago number is full of useful, up-to-date papers on numerous medical topics. Every physician will be well repaid who will take the time to read it.

New and Nonofficial Remedies. 417 pp. American Medical Association. Chicago. 1922

This volume lists articles accepted by the Council of Pharmacy and Chemistry to January 1, 1922. It is a most useful publication, indicating acceptable and trustworthy preparations of recent years. Discrimination has been displayed by eliminating many preparations hitherto included, some conflicting with the principles that govern their recognition, some because the present evidence of their therapeutic worth was insufficient, others because they are off the market. These articles appear in the reports of the Council on Pharmacy and Chemistry. It will be worth the while of every physician to have a copy of this volume in his possession for ready reference in order to keep up to date with the advance in new remedies.
SMITH

Some Comparative Results in Cities and in Counties as Health Units.—The fundamental principles involved in the prevention of typhoid fever, A. J. Warren, Topeka, Kan. (Journal A. M. A., July 29, 1922), says, are the same for the country as for the city, and they are the same the country over. The same is true of smallpox, diphtheria, infant mortality and other diseases concerning which we have fairly accurate knowledge. The only difference is in the practical application of the fundamentals involved to the given area. And even here differences are apparent only in the execution of the details, and are not general. Natural factors also favor the country dweller, and the present conditions are a reproach to our lack of efforts and intelligence. An effort was made to determine the relative cost of, and effectiveness of, public health work in urban and in rural communities. A survey covering three cities and nine counties, all having well organized health departments, was undertaken. The evidence submitted proves, conclusively, nothing.

NORTHWEST MEDICINE

The Journal of the State Medical Associations of Oregon, Washington, Idaho and Utah

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Vol. XXI. September, 1922 No. 9

PACIFIC NORTHWEST MEDICAL ASSOCIATION NUMBER

In accordance with an agreement between the Pacific Northwest Medical Association and Northwest Medicine, this issue is devoted to the publication of the addresses and discussions at the meeting of this organization, held at Spokane, July 6-8. These have been obtained from stenographic notes with the exception of a few addresses which were later embodied in written papers. All of the addresses are included in this issue with the exception of that of Dr. Butler, of Minneapolis, which will be presented in the October number. In consequence of the amount of material to be published the usual features which ordinarily appear in this journal have been omitted so that all available space can be devoted to the material from this meeting. Since these papers and discussions have been obtained from the notes of a lay stenographer, unfamiliar with technical medical terms, indulgence is craved of the speakers whose addresses comprised the program, as in some respects they may be found at variance with the statements presented at the meeting. Because of limitation of space it has been necessary materially to condense the stenographic reports, but an effort has been made to retain the substance of the speakers' remarks, so far as they were recorded. It is believed that this record of the great medical meeting will be of value and we trust it will meet with the approval and commendation of those in attendance at what was the largest and considered the most successful medical meeting ever held in the Pacific Northwest.

At this meeting a permanent organization was formed of this new medical association. The constitution and by-laws adopted will be found at the end of the published papers and addresses.

NEW ADVERTISEMENTS

The attention of our readers is directed to the following new advertisements which appear for the first time in this issue. E. H. Rollins and Sons (page 19) is the well known Boston bond house, founded in 1876. Its main office is in Boston with branches in other prominent cities. They make a specialty of investment securities and from their long experience and firmly established reputation can be depended upon by those seeking investments of value. Therefore they can be commended to the medical profession. The Lyola Post-graduate School of Medicine, of New Orleans (page 20) will in October begin three courses of six weeks each which will be available to the members of the medical profession. Sunnyside Goat Dairy is prepared to furnish goat's milk, as indicated in its advertisement on page 23. This form of milk has a reputation for food value in some conditions of disease.

PACIFIC NORTHWEST MEDICAL ASSOCIATION

HIPPODROME THEATRE, SPOKANE, WASH.

JULY 6-8, 1922

THE CHAIRMAN, DR. J. ELSE, of Portland, Ore.: We are assembled here this morning in the first session of the Pacific Northwest Medical Association. We are making history in medical matters for the Pacific Northwest. This association, as you perhaps know, was born as the result of a meeting held last year, the last of the tristate meetings, at which time it was decided we should have annual meeting of this type in which the men of the great Northwest, regardless of state, provincial or national boundaries, could come together and rub shoulders and discuss medical problems. Another feature though we felt was especially necessary, and that was to bring in contact with the west the great minds of the east at these meetings. Our state association gives us an opportunity to develop western men, but the majority of us find it impossible to take trips east to go to the meetings of the American Medical Association, and consequently we believe that a meeting of this type, when we have the medical profession of the entire Northwest together, and can bring men from the east to us, is of great service. It was the purpose of this meeting, as outlined by the executive committee, to bring the thought from the east rather than to put the western men on the program, reserving the western men for our state and provincial meetings.

Another thing that we thought wise in connection with these meetings was that the expensive entertainments that are given at meetings of this type in the past should be discontinued. I say this in explanation that you may know why we have forbidden the Spokane men to show us the entertainment they have done in the past. It was decided we were not going to have expensive entertainments; we are coming together for real scientific purposes.

I am not going to take up further time outlining the purposes of the association as I think you are familiar with them. I want Dr. Epplen at this time to tell us some of the things in connection with the program, and to make some announcements. I want, in behalf of the Executive Committee of the physicians of the Northwest, to express appreciation to the Spokane men for the immense amount of work they have done in developing this program. The credit all goes to Spokane. Dr. Epplen will tell us some things for the program committee.

DR. FREDERICK EPPLEN, of Spokane: The credit all belongs to the men who consented to come. There was no trouble in getting together a program of this kind. Everyone who was asked was perfectly willing to come. Unfortunately one of our men, Dr. Woodyatt, is not able to come because of illness and death in his own family. I regret this very much because he was one of our important speakers. Unfortunately Dr. Billings will have to leave Saturday morning and in order to arrange for his earlier appearance Dr. Dunn has given his place. This afternoon Dr. Billings will deliver his paper on arthritis. Dr. Cannon has given his place to Dr. Billings on his Present Day problems of Medical Practice, and Dr. Cannon takes the place left vacant by Dr. Billings on Saturday.

CERTAIN PHASES OF THE CHRONIC NEPHRITIS PROBLEM

HENRY A. CHRISTIAN, M.D.
Harvard Medical School
BOSTON, MASS.

I have come out here accepting your invitation supremely gladly for two reasons. One of those reasons is that I like this northwestern country very much and I have for years taken every opportunity that I could get to come out here. The other reason is I believe very heartily in the value of the movement that you are inaugurating in this kind of a society. I believe it has great possibilities for good and that it is the particular type of organization needed over this country at this particular time. The movement has gotten under way in certain parts of the country and has met with tremendous success. Those of us who are invited to come to the first meeting very greatly appreciate the honor of being permitted to share in the inauguration of this sort of a society which, after all, is more a post graduate organization than the ordinary idea of a medical society.

Today I want to take up some of the problems of nephritis. In doing so I want to refer first to one or two points in connection with the function of the kidney. We always look on the kidney as esentially an excretory organ, an organ that gets rid of waste products. Of course that is what it does to a large extent, but perhaps that is not the most important function of the kidney. More important than getting rid of waste products perhaps is as a regulatory mechanism in keeping in balance or equilibrium the body fluids. Me have to realize that very small changes in the salt content and in the chemical reaction, for instance along the lines of acidity, make vast changes in the body economy, and the actual chemical change that brings about those broader disturbances of equilibrium is relatively small. Consequently the kidney has to be on the job all of the time in maintaining the body fluids in equilibrium so that the body may function. And I fancy that after all perhaps that is the more important of the functions of the kidney.

Symptoms of renal disease then depend not only upon the accumulation of waste products, because the kidney is not functioning properly, but they depend also on disturbances in equilibrium in body fluids. I wish I were in a position to elucidate further that idea, but I am not a physical chemist and many of those changes depend upon physical and chemical disturbances with an intricate mathematical formula that only a mathematician can understand, and I am not a mathematician. But I do want to emphasize the importance of those changes and the necessity of not losing sight of them when we consider the sick patient with disturbed renal function.

The kidney functions by a combination of excretion and absorption. The glomeruli act under well known physical laws, governing solution and filtration to remove from the blood plasma those substances which are capable of passing through a semi-permeable membrane. What goes on here is largely mechanical. Were this all, the body rapidly would be depleted of numerous substances necessary to its proper function and death would result.

In the tubules on the other hand we are concerned both with these mechanical physical changes and cell activities which bring into play or action the vital processes, and it is in the resorption through the tubules that cell life plays its more important part. Just to illustrate how important the resorption is let me give you one or two figures. If one liter of urine is formed sixty-two liters of water pass through the glomerular membrane and sixty-one liters are resorbed. Resorption of sixty-one liters to make one liter of urine. If on the average in this one liter of urine six grams of sodium chloride are present it has resulted from the resorption of 242 grams in the tubules of the 248 grams which have passed the glomerular membrane. Now, it is quite obvious that disease of the kidney may affect either filtration or absorption or both, and it may affect the one or the other in varying degree and as a result profoundly change the character of the urine, and what is more important may change very greatly the composition of the body fluids along the lines of disturbing their equilibrium. In the future in researches upon renal function we will probably learn a great deal more than we know now about the physical and chemical laws governing these changes and we are looking to the physical chemists to throw the greatest amount of light upon renal function and indirectly upon renal diseases in the next few years.

This idea of excretion through the glomerulus and absorption in the tubules has been elaborated on by Cushney into what is now considered or spoken of as the modern conception of renal function. During the last year Professor Richards and his associate, Dr. Wearn, at the University of Pennsylvania, have thrown a very considerable amount of confirmatory light upon this theory of Cushney by having succeeded in actually catheterizing a single glomerulus under the microscope in the kidney of a frog and have collected the excretion from one glomerulus and subjected it to mechanical analysis, finding that it contains in content urea, sodium chloride, and these other substances that it should contain to fit in with the theory of Cushney. And these ingenious experimenters have in their own way thrown very much confirmatory light upon the theory of Cushney, so I think we can consider it as definitely proven today as are any of our conceptions of physiologic action in the human body.

So far I have touched briefly on renal function in order to emphasize the close relationship that must exist between renal function and the composition of body fluids in order that you may understand that no adequate concept of renal disease can be obtained from merely studying the composition of the urine and the kidney pathology. Nephritis involves changes in the body as a whole and not merely a disturbance of kidney function in relation to kidney excretion. As I have already said, not alone excretion of body waste is disturbed, but there is this important relationship of the maintenance of equilibrium in body fluid. As a result the study of any single substance excreted by the kidney, whether or not followed by minute chemical reactions in the blood or urine, cannot give us the whole picture of nephritis. I do not mean to say that it is not important to study the blood urea and urea content of the urine, but I do mean to say you have not answered the whole question when you know what the blood urea nitrogen content is, or what the daily excretion of urea may be, and the same thing applies to all other diseases. It is a combination of the application of tests with a careful clinical study of the patient that is going to get us as far as possible with our present day knowledge along the lines of elucidating the problem of nephritis in the individual patient who comes to us for treatment.

Now, what do we understand by nephritis? Numerous definitions have been offered. The following seems to me quite satisfactory and it is one that I have used with my students in Boston and I am going to give it to you who are my students in Spokane. Nephritis is a diffuse, progressive, degenerative or proliferative lesion involving renal parenchyma or interstitial tissue, or both, and as a result disturbed renal function in relation to body function. Such terms as nephropathy or nephrosis, etc., seem to me to add very little to our concept of what is going on in the kidney and I do not see any particular advantage in introducing new terms if they don't throw light on the subject. I am rather old fashioned in my ideas and I think it is better to adhere to an old name until we have one we all will agree is very much better than the old one, because it explains more thoroughly what we understand by the process.

Applying to classification of cases of nephritis this idea of old fashioned simplicity, I think we can get along best by using a very simple classification. I have found the following very satisfactory:

1. Acute nephritis.
2. Chronic nephritis.
    (a) with edema
    (b) with hypertension
    (c) mixed or combined type.
3. Essential vascular hypertension progressing into chronic nephritis.
4. Renal arteriosclerosis progressing into chronic nephritis.

Any more complicated classification I have been unable to apply in my clinical work.

I have been criticized fairly frequently for advocating such a simple classification. Obviously it is a confession of ignorance not to have a large number of subdivisions, but if you are ignorant why not say so. Don't attempt the impossible. It is my belief that at the present time you cannot satisfactorily classify the patients with nephritis that you see into very many more subdivisions than those I have placed upon the board, and it rather complicates than simplifies the clinical considerations to attempt to apply an anatomical or pathological, histological classifications into which you can only put your patients after they have died, come to autopsy, and their tissues removed and studied under the microscope. That is going a little too far into the future for an every day working clinician who wishes to classify his living nephritic patients. It is the progression of renal lesion that renders difficult grouping of undivided cases in any classification. Acute nephritis may run its course and the lesion very largely heal. Subsequent attacks of acute disturbances may inaugurate lesions that will steadily progress into a chronic type of one form or another. Many chronic forms begin so insiduously that we have no knowledge of their inception. Chronic types not infrequently, as time goes on, progress into another form. Consequently the end stage revealed to the pathologist may be quite classic when the clinical course has varied much.

It is the progression, or, as we really term it, the life history of chronic cases of nephritis of which we know least and in this field much remains for investigation. Study of a chronic disease in many individual patients, from inception of the condition to death of the patient, is a slow laborious process and yet this needs to be done before we can understand chronic nephritis. Chronic nephritis, too, as a disease is not solely a renal process as already explained, but changes in the kidney are intimately associated with disturbances in the vascular apparatus of the body and this adds complexity to the consideration in our classification, the terms edema, hypertension and arteriosclerosis being vascular phenomena. In the same way the changes in the eye grounds are local vascular disturbances, a part of a general condition of which renal manifestation are but a part. Secondary to, or coincident with the vascular disturbances, cardiac lesions develop so that in most patients we are really concerned with a cardiovascular renal complex, the disturbances of which, for purposes of diagnosis and treatment, need to be properly analyzed.

Just a word about the attempts to diagnose the type of nephritis from theoretical considerations based on what part of the kidney some particular substance is excreted, which in a special case is decreased in amount, and would justify you in saying that this particular patient has a tubular lesion, or in another particular case an essentially glomerular lesion. In actual practice localization tests have all fallen down and the reason for it lies in the fact that there is apparently no close localization of excretion of any particular substance through any particular cells of the kidney. As I have already said, most of these substances appear in the urine primarily because they pass the glomerular membrane. The amount of them in the urine depends upon how much or how little of these substances were resorbed in their passage down the tubules.

During the passage through the tubules it is not alone changes in the epithelium of the kidney that determine the absorption, but the absorption depends also upon disturbances that are going on in the blood stream in the circulation of the capillaries along the base of those epithelium cells lining the tubules, and consequently we have what we speak of as threshold substances and non-threshold substances. For instance, sodium chloride is a threshold substance. Never does the urine contain all of the sodium chloride that passes the glomerular membrane, for the simple reason that, if it did, soon all body fluids would be depleted of sodium chloride. And if the sodium chloride equilibrium drops only a relatively small amount life no longer is possible. Were it not for these threshold substances the kidney would too rapidly deplete the body of substances that are needed to maintain the normal metabolism of the body. On the other hand, urea is a non-threshold substance, is not resorbed as far as I know in the tubules, and what we find in the urine represents the amount that has passed the glomerular membrane.

Another thing that very greatly complicates the problem of the patient with chronic nephritis is the intimate relationship that exists between what is going on in the kidney and what is going on in the cardiovascular mechanism of the body. It would be a far more simple problem if only the kidney were disturbed by disease and there was not a concomitant change in the small blood vessels and a consequent change in the heart, either as a result of the kidney condition, or as a part of the general process that is going on in the body. That is the reason why in such a classification as I have put on the board we have to introduce the terms edema, hypertension, arteriossclerosis. Those are terms that have nothing to do with the kidney. Those are terms that depend upon changes that are taking place in the vascular mechanism of the body. The patient becomes edematous and for one reason or another his small arterioles and capillaries leak or excrete fluid as a result of changes in the wall of the vessel itself. The patient has high blood pressure because of changes that are taking place in these small arterioles scattered all over the body and not because of some particular type of lesion in the kidney. The lesion in the kidney may set up changes that lead to the hypertension but it is not only the kidney that is solely concerned.

Let me illustrate that by two types of patients. These patients on superficial examination may be of almost identical appearance. Each shows extensive edema. Each has an enlarged heart. Each suffers from high blood pressure. One has poor renal function and is essentially at the terminal stage of chronic nephritis, a chronic nephritis with hypertension who will soon pass into uremia. Treatment will have very little effect on this patient's edema. The uremia may be temporarily postponed and that is about all that can be accomplished by treatment. The other patient superficially examined appears just the same but has good renal function, apart from changes incident to circulation through the kidney, which is poor. The patient is an essentially cardiac case in the stage of broken compensation from chronic myocarditis. Treatment with digitalis and the diuretics will remove the edema, causing it to disappear, and for a time will restore renal function to pretty nearly normal level. The one case is essentially cardiac, the other case is essentially renal. Careful study of renal and cardiac function in these two types of cases will determine the treatment. Failure to realize that these two different types of cases, approaching an end result from opposite directions, may superficially appear similar is the cause perhaps of the very great confusion in the minds of practitioners of medicine as to what diuretics will or will not accomplish in the patient with edema. It all depends upon the material condition of the kidney on which the diuretic is to work as to whether or not you will get an effect. Incidentally it also depends upon the judgment used by the practitioner in his therapeutic application in knowing when to push the diuertic and how; when to withhold the diuretic; when to expect diuersis from digitalis, and when not to be disappointed when you don't get it.

During the last few years we have been in a rather unpleasant situation in this country because the best available diuretic has not been on the market and we have been unable to procure it, namely theophylin, or under its trade name of theosin. Our good American pharmaceutical concerns, I know not how long ago, stopped the manufacture of theophyllin, although it is an excellent preparation, and we had to depend upon our German friends for theosin until our Government stepped in and prevented the importation, as a result of which a large number of waterlogged patients have dragged on their uncomfortable existence, being unable to secure succor from the manufactured American preparations or from Germany under the restrictions imposed by the United States government.

I have recently had under observation a poor devil of a woman who was most uncomfortably waterlogged for eighty-one days because digitalis did not produce diuresis and none of the other diuretics tried produced any increase in urine. She was eliminating an output of some four or five hundred cc. of urine per day, until one day one of my colleagues came in who had a little supply of theosin cached away and presented us with two small doses, which increased the output of urine of that patient from six hundred to six thousand, six hundred cc. of urine in twelve hours. Fortunately for us, I have had a letter from the University of Chicago, received the day before yesterday in Seattle, saying that theosin is now again available, being manufactured in this country. When I left Boston I was still unable to procure a supply of either theophylin or theosin. Theophyllin is the same thing. It is in the United States pharmacopiae. By all rights it ought to be in every drug store and it should be very much cheaper than theosin as is true of all pharmacopeia versus trade preparations. So far we have to pay the larger price, but it is worth while if we can remove the fluid from these waterlogged patients that do not respond to any other drug.

In the remaining time I think I can perhaps most profitably to you take up some points in the treatment of chronic nephritis, using two patients who have been under long observation and have gone through various changes in their renal function during this period. The first patient I want to speak of is a woman who came under observation in December, 1917, when she was fifty years of age. The symptoms of nephritis had begun two years prior to that time, or in 1915. At feet. This had gradually progressed, increasing in amount until May, 1917, when it had become so marked that her only comfort could be obtained by sitting in a chair with her feet propped up, or lying in bed. During those two years the only other disturbance, apart from the appearance of albumin and casts in the urine, had been a slight increase in the amount of night urine so that the patient had to get up one extra time to pass her urine. Shortly after May, 1917, the urinary output decreased in amount and she began to have slight digestive disturbances, a little nausea, and at that time she was waterlogged with marked edema of the subcutaneous tissue everywhere and free fluid in one pleural cavity, and a marked degree of ischuria. Two years after the onset of the process renal function, as measured by retained nitrogen in the blood or by phthalein excretion, was still normal. The only disturbance in renal function was the inability of the kidney to satisfactorily and completely excrete sodium chloride and water and, as a result, there was an accumulation in the body tissues of these two substances, but there was no accumulation of the so-called waste nitrogenous products and the patient had had no symptoms of the general type that we refer to as the result of retained nitrogenous substances, namely uremic symptoms. When she came to the hospital that was her condition. Her cardiac function was normal. By that I mean her heart was not enlarged. Her blood pressure was normal. There was no demonstrable lesion in palpable arteries. There was no lesion to be made out in the fundus oculi. Now, the therapeutic problem of this patient was a simple one, namely, to get rid of that accumulation of fluid. With that removed the patient was presumably normal. She had ascites and that is simply handled by mechanical means, namely by tapping the abdomen, and the abdomen was tapped from time to time as the fluid reaccumulated.

It is of interest in connection with this type to point out that in these renal cases a large part of the salt fed the patient, which does not escape through the kidney, accumulates in the ascetic fluid. We had one patient we tapped a great many times. We removed nearly one hundred thousand liters of fluid from the abdomen in repeated tappings. Over a period of ten months we quantitated the daily salt intake and the daily salt output in the urine. During that time the patient received 547 grams of salt by mouth and 438 of the 547 were found in the ascitic fluid, 99.9 grams in the urine, and about 10 grams went out by the bowels. This indicates what becomes of sodium chloride in some of these cases.

If a kidney can only put out in ten months 100 grams of 500 odd grams given, the obvious thing to do therapeutically is to lower the load on the kidney as much as possible by lowering the salt intake in the food. If you will think of how you probably shake the salt cellar over your steak you will see that 547 grams is not a very large salt intake in ten months. That patient was on about two grams of sodium chloride per day, and that represents about as low a level as you can get unless you particularly use foods that contain an extremely low salt content, and if you do, it is very difficult to maintain your patient for any length of time upon that diet because the diet is so unappetizing. So that during this time of ten months when the patient was being tapped, we kept her on a food intake that contained about 25 grams of proteid per twenty-four hours and 2 grams or less of sodium chloride, and because there is an intimate association between sodium chloride and water excretion, although we don't fully understand what it is, we kept her also on a low fluid intake, as low as we could consistently, and that is somewhere from a thousand to twelve hundred cc. of water or other fluids per day.

Of course, we have to remember that a patient is not a test tube, and taste, appetite, metabolism, weight and well-being, and a few other important things, have to be considered. You cannot say that the patient can only excrete 500 cc. of fluid per day and consequently we will only give 400, or she will only excrete half a gram of salt a day, and we will only give a quarter of a gram. Theoretically it is all right, but some other physician would have your patient in a few days, or if he did not the undertaker would.

As a result of repeated tappings, maintaining the diet and the low protein, salt, and water level, with the idea of not reducing the diet below what the kidney was handling, because that is impossible, but with the idea of lessening the load as far as possible, as time went on this patient began to get free of ascites, began to get free of edema, and today has no ascites, and only has edema of the ankles when she is very fatigued from standing a long time on her feet. Her urine still contains albumin and casts in abundance. The blood nitrogen is somewhat decreased, but not much below the lower limits of normal, and she has a better ability to handle salt and water than she had in 1917. She is not a thoroughly well woman, but she is very comfortable as a result of that line of treatment. The only other treatment the patient had during that time consisted in increased elimination of water by the bowel by the simple means of catharsis. That was persisted in for a certain period of time until the patient showed a certain amount of debility and then the debility was met by decreasing the catharsis, and later catharsis was repeated. That patient has never had any evidences of cardiac disfunction and so far the blood pressure is still within normal limits. There has never been any occasion to consider the problem of symptoms that might regarded as impending uremia because those symptoms have never appeared.

In contrast to that, let me take up another patient where the problem has been esentially one of hypertension. This was a patient that I met for the first time in 1914. He was a powerful athletic man accustomed to take hikes of fifteen and twenty miles a day whenever he wished to. He was what we call in Boston a "Brownie," that is, he went over to the L street bath and took a swim every week in the year provided he could break through the ice. Incidentally, his blood pressure was found to be high in 1914. He had a retinal hemorrhage, or choroidoretinitis, or a combination of the two. That led his opthalmologist to suggest he had probably hypertension and a renal lesion. In 1914 his blood pressure was over 200 systolic with a corresponding high blood pressure diastolic. The urine, as far as the best methods of testing we could employ, appeared to be absolutely normal. His heart perhaps was enlarged, but if it was it took the x-ray and a seven-foot plate to demonstrate any enlargement, and even then it was questionable. He had no symptoms whatever because he was still taking his icy plunge and his twenty or twenty-five mile hike whenever he felt like it.

What did we do with that sort of a patient at that time with a good renal function? We didn't do very much in the way of treatment. We interdicted his icy plunge and told him not to go swimming until the outside temperature was above freezing. We told him to keep on with his exercise up to the point of getting short of breath, and advised him when he went down on the Maine coast for the summer to keep off the crags and not climb those small mountains we have in New England because he might get a sudden attack of dilated heart, but otherwise to go on with his usual egime. He was one of those fortunate men whose business pressure was not very high. He was a broker and his office hours were very much as he chose to make them. He had few dependents and a comfortable income. He had been a clubman and had taken rather too many cocktails, and in that day you had to consider whether or not cocktails should be continued because they were freely obtained. We advised him to cut out his cocktails. He smoked very little, not enough to hurt anybody, so no change was made in that respect.

Periodically he has been coming back to the hospital until a comparatively short time ago, not because he was sick, but he came in in order that we could study him and that he would get the advantage of certain advice that we might be able to give in regard to his renal function. It took five years to develop any demonstrable change in his urine, and after five years—that takes us to 1919—the change was very slight, merely a night polyuria, still no albumin; on diligent search occasionally we would find a hyaline cast. His blood pressure had kept up. His heart had gradually enlarged; it was still functioning perfectly well. He was beginning to show a little shortness of breath if he ran up two or three flights of steps. I never went on any of these hikes with him, but I imagine that after a ten mile walk he sped up his pulse a little bit and was somewhat short of breath, but he was going extremely well.

About six months later he developed a marked hematuria without any change in the composition of his urine besides the presence of blood cells, and with the blood naturally a moderate amount of albumin, but no casts. He had had several attacks of choroidoretintis about a month before this hematuria was observed, and was placed by his doctor on rather large doses of mercury, which seemed to influence favorably these attacks in the past. We thought that the mercury might have acted as an irritant and caused his hematuria, so our first step was to discontinue the mercury for a couple of weeks or longer to see whether the hematuria decreased. It did not. Then we said it is likely this hematuria is not of a renal origin but of local origin apart from the kidney itself and we had better look into the matter. Cystoscopic examination showed a papilloma which was bleeding and am oderately enlarged prostate. Five years had been added to his three score and three. Now h was 68 years old. The papilloma was removed; the prostate was removed; the patient made an uneventful recovery, and four or five months later still had very slight changes in the urine, although now albumin was more frequently found. Casts were discovered with less difficulty and there began to be a shutting down of his output of urine. If he ate a large amount of proteid there would be a definite increase, not great, but a definite increase in his blood urea or nitrogen, but still he was in very good condition, except a slight increase in his diastolic pressure, not enough to require digitalis therapy, but enough to limit some of his physical activities.

Time went on and we get down to the last occasion when we studied him again and found that his renal function had progressively decreased in the last six months. He had a definite increase in his blood urea nitrogen, without any increase in his proteid intake. He had a definite increase in his urine output, he began to look a little ascitic, began to lose weight, looked as if he was beginning to develop what we speak of as symptoms of slight chronic uremia. We took him into the hospital and put him through a two weeks eliminative regime, which included bleeding, sweating, catharsis, rest, and reduced diet, and his renal function very much improved as measured by the various tests, and as a result of this form of treatment he is back at his customary occupations, still walking further every day than most of us probably would like to do, and still enjoying life, however with somewhat more limited proteid intake, etc. Eight years have gone by and he is seventy-one years of age. The problem now is what the next few years will bring forth. He has passed his Biblical three score and ten, he may yet reach his four score, nobody knows. It is probable that he will have to come back from time to time to the hospital for more active treatment. He is progressing from essential vascular hypertension to definite chronic nephritis. So far he has not yet needed digitalis.

There are three possibilities in his care to be met by three different therapeutic measures: progression of his renal lesion with the problem of uremia; increase of his cardiac disability with the problem of the treatment of the hypertension which goes with a failing heart; the possibility of a sudden vascular accident such as a cerebral hemorrhage, or another type which you may call vascular accident, angina pectoris, and the appropriate therapeutic treatment. I see that my hour is up and with this, which after all is more of an outline and a suggestion than a finished discussion, I will leave the problem to you. The digitalis part of this consideration I will take up the day after tomorrow.

DISCUSSION

Dr. W. S. Griswold, of Seattle: I was very much interested in Dr. Christian's simple classification. It seems to me that classification is rather harmless if you don't carry it too far, but you can waste all your time classifying and not do anything else. I think that the simple classification Dr. Christian has given us is a good working basis. I like to look upon nephritis as a general disease and not a kidney disease especially. It is very evident that chronic nephitis and the ordinary acute nephitis differ a great deal. Acute nephritis is probably a more active inflammatory lesion of the kidney and the kidney may be largely to blame for the trouble, but in the chronic nephritis we have a patient who is ill for some time before developing symptoms. None of our methods of diagnosis of chronic nephritis diagnose the disease at a very early stage. You may examine the urine and not get any evidence of disease; you may examine the blood and find nothing retained in it that we know anything about. That is, there are some substances that are protoxic to animals as ordinary urine is.

The kidneys, when they are diseased, do not excrete all the substances they should excrete and this affects the whole body. For example, the urine in chronic nephritis is usually very pale in color.

The kidney is not excreting the coloring substances, which has been found to be toxic. Probably there is thrown an added load on the liver and it doesn't do its work, which gives the patient his symptoms. Probably the most important part of the urine examination are the simplest things we most often neglect, that is, the specific gravity, the quantity and the color, because the color indicates toxemia or that some toxic substances are being held back. Whether other substances are being held back at the same time we don't know, but at any rate the urine is usually constantly light in color that comes from a patient with chronic nephritis. When it comes to the blood examination this is very important. But we cannot make a diagnosis of kidney disease by blood examination alone. The urea may be held back in large quantities, and still there may be no symptoms of uremia. We may find an increase of some of the other substances like creatinin which indicate that the end is near. The most important way to eliminate some of these substances that form in the blood is probably by catharsis and yet here again the judgment of the physician should be used. If you tell your patient to use plenty of cathartic he is likely to use a great deal more than necessary and do himself a great deal of damage. while, on the other hand, if he will report to you occasionally so that you may put a check upon this you may do him a great deal of good.

Dr. Arthur D. Dunn, Omaha, Neb.: There are two things I have found in practice to be useful in the conception of kidney diseases. One is the problem of edema. We say when we have albumin and casts in the urine that nephritis is present. That is the usual criterion for the existence of nephritis by the practitioner. Now, there are a large number of cases in which albumin, casts, and cells, and even blood, are present in the urine. This condition appears following exercise. We see it for example in marathon runners, we see it in swimmers who have been exposed to cold and have undergone excessive exertion. Seven years ago I examined the urine of athlete before and after a marathon race that was run in a cold day in November. We obtained specimens of urine both before and after the run of the fifteen contestants. Eight of the fifteen cases showed albumin in the urine, and several of them showed casts, cells and some blood. Now this is a transitory phenomenon. The same phenomenon occurs after sunstroke. This class of cases I think is an acute transitory kidney swelling possibly due to lack of sufficient oxygen. These cases under rest and oxygenization will get well and get well rapidly.

Another conception in connection with nephritis that seems well worth insisting upon is that of infection. We don't know the cause of hypertension, but it seems to me that focal infection is one of the few tangible factors that enters into the pathological conception of chronic interstitial nephritis and hypertension. I have seen a number of cases of nephritis with hypertension that have cleared up with the removal of evident foci or infection.

Dr.. Henry.. Christian: The first speaker emphasized the pimortance of knowing the amount of specific gravity of the urine. I would like to endorse that because if you know the fluid intake of your patient, the urine output, and the specific gravity, you do have one of the best criteria of disturbance in the renal function. I would like to add to that the importance of weighing your patients at frequent intervals, because variations in weight tell you a great deal about the condition of patients. It is a very striking thing how few hospitals, outside of tuberculosis hospitals, weigh their patients.

The point about transitory urinary albumin and the hematuria emphasizes again what I spoke of as the importance of considering the relationship between the equilibrium of blood and other body fluils and renal function. There is a sudden disturbance as a result of this severe exercise of various factors in the body fluids, among others a tremendous loss of fluid and a change in reaction, exercise producing acidity.

The last point, focal infection. I said nothing about focal infection, because I think it is obvious there should be search for focal infection in all chronic cases and removal of the fount of infection when it is found. Per contra, there is a tremendous swing of the pendulum too far and imaginary focal infections are being daily treated surgically without any benefit to the patient because the focal infection did not exist. You must use your sense, particularly your common sense, in determining whether the focal infection is present or not. If it is present remove it. If it is not present, confess again your ignorance of the cause of the disturbance and let well enough alone.

CANCER OF THE MOUTH

Joseph C. Bloodgood, M.D.

BALTIMORE, MD.

First, I want to make a few statements of the changed attitude of men who are practicing surgery. We are disappointed with the operative treatment of cancer and all disease in its late stages, and we are making investigation and search for a cause which can be removed, or for new light by which our methods of treatment can be applied early. Now, the oral cavity—leaving out the pharynx, the nose, and the sinuses—presents a very simple example of such an investigation. In the mouth there apparently are two easily discernible factors that can be removed, infection and chronic irritation, the latter more easily removed—tobacco and rough teeth. I am convinced from my experience that surgical bacteriology since the time we began to wear gloves has become largely a lost art, at least with surgeons. As long as we had wound infections our interest in surgical bacteriology was maintained, but the moment gloves were introduced and worn as a routine by surgeons, and wounds with rare exceptions healed, interest in surgical bacteriology disappeared. It was revived during the war, and since has died out. In our own clinic in Baltimore during the last year less interest, until recently, has been shown in surgical bacteriology than ever before. Again and again opportunities have been lost by our best trained men and observers from the simple failure to look at the cover slip smeared with evident pus in an abcess.. In reading Pasteur's life again on my journey here, I found I had overlooked a very important point. Pasteur in his bacteriological work sterilized his instruments by passing them through a flame and wrote Lister about it, who read it but did not understand its significance. And I feel the same may apply to the mouth, that it will be some time before we realize that the mouth is one of the greatest sources of infection, and we need investigation to see whether we can sterilize the mouth as we can our hands.

There is absolutely no certainty of permanent cure in the treatment of cancer in the mouth in its late stages by any known treatment. Ten per cent of cures is the best result possible. Cancer of the mouth is a preventable disease. It lies entirely in the employment of oral hygiene and the care of the teeth. But the mortality from cancer of the mouth should be very small as compared to the mortality from other diseases due to infection in which the mouth is the portal of entry. Although we have readily recognized the tonsils and over-recognized undoubtedly the apical tooth abscess, we have by no means reached the limit of an investigation of the oral cavity as a portal of entrance.

If you take lesions of the lower lip which can be excised with a V-shaped piece and closed without a plastic operation, I know of not a single recurrence in the hands of any surgeon who has sent the specimen to the laboratory of Johns Hopkins Hospital. The moment the lesion is so extensive that it requires a plastic operation to close, a recurrence is observed, due to late intervention, and therefore it is a question of educating your community.

If the lesion on the lower lip under the microscope shows carcinoma, the glands should be removed. I will not discuss the details of that removal, but if these glands under the microscope show no evidence of cancer—there has never been any recurrence. But if the glands removed do show evidence of cancer there are about twenty per cent cases that have lived five years or more, which is better than any other form of cancer with metastasis. Now, if my figures are correct, it seems to me it is unjustifiable to follow any other treatment for a lesion of the lower lip than the removal of that piece with a knife under novcain. In no other way will you know whether it is carcinoma. We must not wait for palpable glands.

We know the only question to decide is shall you, when the lower lip is carcinomous, add to the removal of the glands x-ray or radium treatment before or after. If the results are only fifty per cent, it seems to me it is worth while to add that treatment, but I have no evidence as yet how much it will increase the probability of a cure. In a number of cases of cancer of the lip, and more especially cancer of the tongue in early cases, I have radiated the neck. Dr. Burnham and Dr. Neil have treated such cancer with all the radium they possess, and the application has been followed shortly by a rapid growth of glands which, when removed, were carcinomatous. But the chapter on the use of radium and x-ray in glands of the neck can not yet be written upon facts, only upon hope, but it seems to be that a chapter on the attitude towards a lesion on the lower lip has been written and is conclusive. No one, therefore, should have a recurrence in cancer of the lower lip that is subjected to operation early.

X-ray and radium on these early lesions are not as certain as their complete removal, so much so, that I would not feel justified in starting in with x-ray and radium on a lesion of the lip, tongue, gum, or mucous membrane in the early stages. When the carcinoma is there and extensive I know the best surgeons only accomplish ten per cent of cures. I am then very glad to turn over all these cases to x-ray and radium, but I don't believe the field of x-ray and radium will be there. Radiologists also get their results, but they must have an early opportunity, and even in many cases that we see early we know that surgery offers very little. I trust I have illustrated the importance of the exact history and in rare diseases the importance of getting that history, and the importance of palpation, the importance in surgery of the margin, especially in the small areas, the importance of the surgeon looking at tissue, and that tissue should be subjected to microscopic examination, and perhaps just as important, that tissue of those sections should be preserved for future record because those sections, or new sections from that tissue are more to be relied upon than the written diagnosis.

DETROIT, MICH.

Dr. T. C. Witherspoon, of Butte, Montana: One thing has struck me in late years, the earlier appearance of this cancer or a suspicious lesion, but unfortunately I find that too many doctors are badly equipped, illy posted on the subject, who are undertaking to do early work. Consequently I see cases that might have been helped had a capable man seen them when they first went to the physician for advice.

As to use of radium, these patients are frequently sent for radium treatment. In our experience with the squamous type of cell cancer, we cannot get any result of value out of radium. Now, the basal cell type in an adenocarcinoma will occur in much smaller numbers, and possibly might be cured, but we take no chance. Why expose these patients to a radiation of x-ray when we have something so much more reliable? Our squamous cell cancers we have not been able to help in the slightest with radium or x-ray.

As to exploration, let me say, I believe one of the most damaging things that the surgeon ever does is to explore a lesion that he doesn't consider radically malignant. Just as the doctor said to you, if you are going to remove it consider it malignant. Curettement or removal of a small piece from the lip, or anything of that kind, does not do. I have yet to look over my records and find those patients have made an ultimate recovery. I think it has been seriously detrimental for two reasons. The first factor is a delay in the time it should be properly handled, and the second factor is undoubtedly a tendency to spread the lesion through the mechanical manipulation.

Dr. R. C. Coffey, of Portland: It would be almost sacrilege to speak of cancer of the mouth in presence of the most distinguished living authority on the subject. So I would like to talk about the society, because I consider it my pet. In 1909 we had a meeting in Portland, which at that time was a record meeting for numbers.

Dr. Crile was our guest, and I had the honor of being president, and at that time I suggested the organization of a tristate medical society and also the reorganization of all medical journals into one to be owned and controlled by the three states. This was organized and committees were appointed at that meeting. We have gone on for several years, having a meeting every three years. I think the greatest and most successful meeting we have had in the Northwest prior to the present one was the one headed b- Dr. Pettit last year in Portland with more than 560 registered, and at which we had the most remarkable array of talent ever gathered together in this part of the country. At that time Dr. Else and others decided that, owing to the success of this institution, they would expand this organization so as to include other sections of the country and also meet every year. I feel we can congratulate ourselves today upon the array of talent that has come to instruct us on the different subjects. We congratulate ourselves particularly upon the program which we have today and also particularly on the way that the doctors have responded. I have nothing to add to Dr. Bloodgood's paper; I have come here to listen. All he said simply bears out the small experience that I have had and I wish we could hear more from him.

Dr. J. Bloodgood: I would like to leave one impression with my colleagues here if I may speak of personal matters. If I can encourage surgeons throughout this country before I die that they can be their own pathologists; to use every opportunity to look at the gross appearance of the disease on which they operate, I will have made, I think, a great contribution to diagnosis of surgical diseases. Do not for a moment think I have any disrespect for any of the things we have looked upon before as positive. I think there has been some feeling that I have gone too far in the criticism of the microscopic diagnosis, but I want you to know I haven't made a criticism, I have only reported a fact. Perhaps the day will come when we will have a special stain for cells, or we may be able to recognize by the cell the exact lesion, but that day has not come, and it is not right, as in the past, for those who have been microscopic pathologists to exaggerate the power of making a diagnosis through the microscope. I leave this impression with you. Dr. Welch, who is a pathologist, visited the great west. When he came back home he said wherever he went—perhaps some of you surgeons he saw are here—"surgeons of experience came to me and asked for help and said: 'I have removed something I think is benign, but I am told that the frozen section shows it is cancer.'" He said as far as he could make out, when there is a difference of opinion between the pathologist looking through the microscope and the surgeon of experience, the surgeon was always right.

THE PRESENT STATUS OF LOCAL AND SACRAL ANESTHESIA IN ANORECTAL DISEASES

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The profession in general, up to a few years ago, pursued a very conservative attitude regarding the use of local anesthesia in all departments of surgery. True in some branches the very simplest procedures were attempted under local anesthesia. Injections and applications of the stronger cocaine solutions and the ethyl chloride spray were used for this purpose, and no further progress was made.

Surgeons, practicing in the various specialties, soon realized that many operations could be performed safely, accurately and satisfactorily without subjecting the patient to the inconvenience and dangers of general anesthesia. They found that hospitalization could be dispensed with in many cases, and when necessary, considerably shortened by relieving the patient of the necessity of recovering from the effects of general anesthesia as well as from the operative procedure.

Among the specialties, which early recognized the value of local anesthesia in its special field, was that of proctology. The fact that practically all of the diseases, which affect the anus and rectum, were peculiarly accessible was early taken advantage of by proctologists. Thanks to the co-operative work of some of the general and abdominal surgeons, many of the major operations on the intestines, both large and small, are now performed safely and satisfactorily by nerve-blocking methods.

In patients suffering from diseases of the respiratory tract, the kidneys, the heart, and in those who are afflicted with debilitating affections of a general type, the fact that operations, often major in type, can be performed under local anesthesia, has been the means of saving many lives.

Having employed local anesthesia for many years, and in thousands of cases comprising all classes of anorectal surgical procedures, the author feels free to state that as the result of his experience, the great majority of all proctologic operations can be performed, often more satisfactorily, under local anesthesia than is possible under general. The co-operation of the patient is sometimes of extreme importance during a proctologic operation.

All cases of anal fissure, prolapsing internal and external hemorrhoids, whether acute or chronic, infected crypts, hypertrophied papillae and undercutting operations for pruritis ani can be performed more satisfactorily under local anesthesia than under general. The same is true with some exceptions in operations for fistula of limited extent, in anal carcinoma, rectal prolapse, polyps, condylomata and granulomata, and in most cases of anorectal abscesses.

With the addition of caudal or sacral anesthesia, practically any operation below the recto-sigmoidal juncture can be painlessly performed, and in addition the coccyx can be removed, and operations for rectocele or any other perineal operation can be performed.

In the successful employment of either general or local anesthesia, there are several essentials to be observed. In the first place, after the diagnosis has been made the psychic reaction of the patient is important in determining whether local anesthesia should be used. It has been the experience of the author that a greater proportion of patients fear the loss of consciousness, incident to a general anesthesia, than they do the possible suffering, which in their own minds they associate with any operation under general anesthesia.

The warmest advocates of anorectal operations under local anesthesia are the patients who have undergone such operations, and a striking fact in favor of this anesthesia is the large number of physicians who insist upon local, rather than general anesthesia, to be employed when they happen to be the patients.

In preparing a patient for any operation, under local anesthesia, one should be just as thorough as for a similar operation under complete general anesthesia. For at least twenty-four hours before the operation the patient should be limited to an assimilable fluid diet. The bowels should be thoroughly emptied by means of a liberal catharic given twenty-four hours before the time selected for operation. On the preceding evening and the following morning a soda bicarbonate enema should be given. The perineum should be cleansed, but not shaved except for plastic operations, the night before the operation.

There is no objection to a cup of hot coffee or a glass of water or milk an hour before operation. In fact it is the author's custom to administer from 15 to 50 grains of chlorotone and one quarter grain of morphine with a glass of hot milk or a cup of coffee two hours before operation. In lieu of this an hour before operation, one-quarter to one-third grain of morphine with one-hundredth grain of scopolamin may be administered hypodermically.

The patient is kept as quiet as possible, relatives not being allowed in the room to converse with him before operation. If he becomes thirsty, there is no objection to his drinking a few ounces of water before going to the operating room, or during the operation.

Of prime importance is the arrangement of the operating room. The success of an operation under local anesthesia may be entirely nullified by the lack of attention to the surrounding details.

The strict observance of silence by all who come in contact with the patient is extremely essential. This means that the operating room should be fully prepared before the patient is brought in. There should be a minimum of nurses bustling around handling basins, instruments and utensils, and what conversation is imperative should be carried on in a subdued tone.

The author employs a code of signs and signals, instead of asking for his instruments or dressings, and thus minimizes the amount of necessary conversation.

The operating table should be covered with a thick pad or mattress, which should be warmed and all instruments, gauze, and paraphernalia kept out of the patient's sight at all times.

The internes and assistants should always bear in mind the fact that the patient is not asleep and that every touch is felt by him, and at all times he should be handled as little as possible and when handled at all, only with the utmost gentleness and care.

The patient's ears are stuffed with cotton and a mask or towel are placed over his eyes. Pillows are allowed, in fact anything which will make him comfortable, and he is not restrained, tied or strapped in any way.

SOLUTIONS AND INSTRUMENTS

The solution used for anesthetizing the skin is one-half of one per cent apothesine or novocain. A 30 cc. all-metal or all-glass syringe is filled with warmed anesthetic solution, and after the skin has been touched with phenol or pinched for a moment, it is punctured with a quick thrust of the hypodermic needle. This needle, by the way, should be sharp and of at least 22-24 gauge.

Quinin-urea solution, of the same strength, is not used for injecting the skin because its injection is painful, while the apothesine or novocaine is quickly absorbed and does not affect the healing of the skin. In the deeper structures, this infiltration with quinin and urea does not interfere with healing at all.

Above all things when an operation under local anesthesia is to be performed, the surgeon must not be in too much of a hurry to start his operation after injecting the anesthetic. One should wait at least five minutes after injecting apothesine or novocain before incising the skin, and in order to achieve the best results in the way of post-operative anesthesia when using quinin and urea, one should wait at least ten minutes after injection before incision. The failure to produce satisfactory anesthesia in most surgeons' hands has been due to their anxiety to start the operation before full and complete local anesthesia has been produced.

OPERATIONS FOR HEMORRHOIDS

What will now be said regarding technic of hemorrhoidectomy is equally applicable to all other operations in this region.

The patient is placed in the left alteral position, which is most comfortable for him as well as the surgeon. After the parts have been cleansed and rendered aseptic by the application of alcohol and half strength tincture of iodine, a point one-half inch posterior to the posterior anal commissure and a similar point at the anterior commissure is touched with a swab moistened with phenol. The injection of the one-half per cent apothesine solution is begun at the posterior commissure at the point touched with phenol.

If one wishes to have anesthesia of the entire rectum, coccyx and perineum, then caudal sacral anesthesia may be combined with local. The technic for sacral anesthesia is as follows:

The two sacral tubercles, which are located in the median line, from one to two inches above the sacro-coccygeal joint, are located with the index finger. Pressing between these two with the finger tip, one feels the depression, which marks the opening into the canal. This point is touched with a drop of phenol, and the needle, with a quick thrust, punctures the skin. The anesthetic solution is meanwhile being slowly forced through the syringe. The needle is slowly pushed upward and inward until one meets the fibrous membrane, which close the lower end of the canal. The resistance corresponds to that of the drum membrane of the ear. When the needle passes through this membrane, all resistance disappears, and it can be passed freely two or three inches into the canal. From 20 to 30 cc. of the solution can be forced into the canal; in fact much more can be injected if the back pressure on the syringe indicates that the canal is not well filled with the solution.

This blocks all of the sacral nerves, and in the course of the next fifteen to thirty minutes will render the rectum, coccyx, perineum and surrounding tissues, with the exception of the skin, sufficiently anesthetic for any operation. Local anesthesia is always combined with sacral in personal practice. Then one secures, not only cutaneous anesthesia at once, but one does not have to wait so long for anesthesia to become complete.

The injection is then slowly carried around laterally, just underneath the skin about one-third of the circumference of the anus on both sides. About one drachm of the solution is slowly injected on the right side, then the needle is retracted to the point of puncture but not withdrawn, but is passed upon the left side of the anus in the same manner, keeping about one-half inch away from the anal aperture. This blocks the inferior sphincteric nerve and branches.

The anterior one-third of the anal circumference is treated in like manner, blocking the anterior sphincteric nerves. Then from the anesthetized areas the remainder of the circumference of the anus is injected. The injection should be carried deep enough so that the needle enters and passes through the external sphincter both anteriorly and posteriorly, and should also include the internal sphincter.

In external hemorrhoids the skin tags should be distended until they are of a waxy white color. The pressure edema produced by the weak anesthetic solution is of more value in producing anesthesia than the amount of anesthetic salt used.

After waiting three or four minutes for anesthesia to become complete, the injected skin at the edge of the anus is grasped at the four points of the compass with the Pennington triangular forceps.

Traction on these four forceps everts the anus and prolapses the hemorrhoids if they have not already presented themselves. Slight expulsive efforts on the part of the patient at this time will assist in extruding the hemorrhoids.

These, starting with the most dependent one, are now injected with one-half per cent solution of apothesine, novocain or quinin and urea hydrochlorid. Sufficient of the anesthetic solution must be used to distend them thoroughly. The injection must be carried up to one-half inch beyond the junction of pile with healthy mucous membrane. Ten minutes must be allowed to elapse before any operation is started if one wishes to secure good post-operative anesthesia from quinin and urea.

It will be noticed that the author has said nothing about the use of the rectal speculum, or has anything been said about dilating the sphincter. If one's technic is properly carried out in blocking the sphincteric nerves, the sphincter relaxes without any effort on the part of the surgeon to dilate it, and by the use of the four everting forceps the entire operative field is exposed in a much more satisfactory manner than could ever be accomplished by any retractor or speculum devised.

After ten minutes have elapsed, the hemorrhoids can be painlessly removed. The author's operation, which of course can be used under general anesthesia as well as under local anesthesia, is performed as follows:

First, the hemorrhoid is seized with the author's pile forceps, and drawn down in its long axis, then a right-angled curved blunt-pointed ligature carrier threaded with number two twenty-day chromic cat-gut, is passed into, underneath and around the hemorrhoid at its juncture with healthy mucosa.

The ligature is tied securely, one end being left fourteen inches long, and the other five or six. All of the hemorrhoids are dealt with in like manner before any excision is attempted. By ligating all of the hemorrhoids in this manner before removing them, operative hemorrhage is reduced to a minimum.

We then return to the most dependent hemorrhoid, the left lateral, which was first injected and ligated. This is again seized with the author's pile forceps, and is excised from without inward, care being taken to remove the presenting pile mass with as little mucosa as possible, and yet excise all that is redundant. The pile is then cut away one- quarter of an inch from the ligature, and ligature being held towards the side of the patient, opposite to the hemorrhoid. This keeps it above the wound and ou of the way so that it will not be accidentally cut.

Then with a pair of small curved scissors and hemostatic or thumb forceps, the diseased vessels which form the bulk of the hemorrhoid below the level of the healthy rectal mucosa, are carefully dissected out, their exposure being assisted by upward pressure of the surgeon's finger on the outside skin beneath the hemorrhoid. All diseased tissue and veins are removed down to the sphincter muscles.

The long end of the ligature is then threaded into a small round full-curved needle, and the wound co-apted with a running suture. This long end is now tied to the short end of the combined ligature and suture, which is used chiefly for hemostatic purposes.

The other hemorrhoids are dealt with in like manner. The one at the upper part of the wound, that is the right side of the patient as he lies in the left lateral position, is left to the last. An injection of the quinin and urea solution is then made under the wounds for post-operative anesthesia, a dressing applied and the patient sent to bed.

OPERATION FOR ANAL FISSURE

The use of local anesthesia in the operative treatment of anal fissure is so satisfactory that in the author's practice a general anesthetic is never employed for this operation.

A fissure is an elongated ulcer of the anal canal, which by its infolding has erroneously been taken for a split or crack and so designated. The principle involved in the treatment of fissure is the putting of the sphincter muscle at rest, at least that part of it involved by the fissure.

We were taught formerly that the best way to treat an anal fissure was to administer a general anesthetic and divulse the sphincter muscles. It is true that this procedure did relieve some cases of fissure, but it was a brutal and unnecessarily damaging method of putting the sphincter at rest. We now know that divulsion of the sphincter really means tearing the fibres of this muscle.

How much more rational, scientific and surgical it is to put that muscle at rest by a clean-cut incesion at right angles with its fibres, than to tear it by brute force!

In the author's practice a fissure is operated on as follows:

The sphincter is anesthetized according to the technic outlined above as in the preparation for the operation of hemorrhoidectomy. The sphincter having been anesthetized and cutaneous anesthesia produced by the injection of one-half per cent novocain or apothesine, the tissues surrounding and beneath the fissure are thoroughly infiltrated with one-half per cent quinin and urea solution.

If the sentinel pile is present, this should be thoroughly distended and the distention carried three-quarters of an inch outside of the external extremity of the fissure.

After allowing ten minutes to elapse in order to insure good post-operative anesthesia, the fissure is grasped with pronged forceps and dissected out in such a way that a V-shaped trench-like wound remains, which is twice as deep at the skin surface as it is at the upper extremity. This V-shaped wound, if properly made, coapts perfectly when the sphincter contracts. When a sentinel pile is present, this is of course included in the excision. Any bleeding vessels are twisted and a strip of gauze is placed in the wound and a compression dressing applied.

The patient is allowed to be up and around on the same day, the bowels allowed to move within twenty-four to forty-eight hours, and the aftercare consists only in keeping the wound clean, preventing the mucous membrane or skin from growing down into the wound and the cauterization of flabby granulations if any. The whole wound will become agglutinated in two or three days, and requires practically no after-care. Oleum petrolatum is freely administered to prevent the formation of hard stools during the healing process.

OPERATION FOR ANO-RECTAL FISTULA

Small anal or ano-rectal fistulas, which have been demonstrated by the use of bismuth paste injections and stereoscopic radiographs to be definitely outlined, may be excised by the same technic as that used in the operation for fissure. In order to insure the excision of the whole tract, it is well to again inject the fistula with bismuth paste at the time of the operation in order that any side tracts will not be overlooked. The yellow bismuth paste shows in great contrast to the flesh, and points out little diverticula which otherwise might be overlooked.

If the fistula is a small, direct, complete channel, a piece of annealed silver suture wire, the ends of which have been made blunt by heating to the melting point, is passed through the fistula from without inward, and the inner end drawn out of the anus with a pair of forceps, and twisted around the external end. This twisting threads the fistula on a loop of silver wire, which may also be used as a tractor, drawing the fistula out so that it may be easily excised.

The operation properly finished will leave the fistula dissected out *in-toto* threaded on the silver loop. The wound is allowed to heal by granulation and if it is not *packed* but simply *drained* with gauze, it will heal perfectly. When the sphincter has been completely severed, there will be no incontinence if the sphincter ends are not kept apart by overzealous packing with gauze in the after-treatment.

Rather extensive fistulas may be dissected under local anesthesia by the expert proctologist. In the hands of the occasional proctologic surgeon, only the simplest operations should be attempted under local anesthesia, until the technic of local anesthesia in this region is completely mastered.

The operative treatment of many other diseased conditions of this region can be just as successfully performed under local anesthesia as the types of surgical operations described above. Among these may be mentioned abscesses, prolapse of the anus or rectum up to the second degree, the removal of polyps, hypertrophied anal papillæ, the excision of diseased Morgagnian crypts, the section of hypertrophied rectal valves, the removal of foreign bodies and impactions, undercutting operation for pruritus and many others.

In addition to the operations performed in the ano-rectal region, it is often necessary to divert the fecal current preliminary to an operation for the excision of a carcinoma, stricture or complicated fistula.

A temporary or permanent colostomy, as the case may be, can be performed very satisfactorily under local anesthesia. When the patient is emaciated or debilitated through the loss of blood or from the effects of long continued colonic disease, local anesthesia is the only safe anesthesia to use.

The technic of colostomy, under local anesthesia is as follows: From 4 to 6 oz. of one-half per cent novocain or apothesine solution is used. The same type of syringe and needle as is used in operations on the anus and rectum are equally adaptable for this work.

The quantity of anesthetic solution is of relative unimportance. The only criterion used is infiltration sufficient to produce complete nerve block. No solution is injected into or between the layers of the skin, but the needle is introduced underneath the skin so that we have a true subcutaneous and not a subcuticular infiltration. It is the latter type of injection, and the use of adrenalin, which is responsible for the skin slough, which has been unjustly attributed to local anesthetic agents.

An area from one to two inches wide and six inches long is infiltrated down to the fascia. This in turn is punctured and infiltrated for the same length. Then after waiting from three to five minutes, all tissues are divided down through the fascia. The underlying muscles are then thoroughly distended with anesthetic solution, and after a short pause are divided, then the fibres are incised or separated by blunt dissection and the peritoneum exposed.

The hypodermic needle is inserted between the layers of the peritonum, and the line of proposed incision infiltrated. The peritoneum is opened in the same manner as under general anesthesia and retracted.

The assistants must bear in mind at all times that the patient is not asleep or under general anesthesia, and all unnecessary conversation, noises and handling of tissue is strictly enjoined. Unnecessary trauma to tissues is avoided under local anesthesia ,and the patient is thereby the gainer.

Examination of the abdominal viscera can now be made. The colonic pathology is then located and the portion of the colon well above the diseased segment is delivered outside of the wound.

If there is any evidence of pain on handling of the colon, the mesentery below the part grasped should be infiltrated with the anesthetic solution after which it will be found it can be freely and painlessly manipulated. The mesentery is perforated with blunt forceps, and a thick walled rubber tube, not larger than a lead pencil, is drawn through to act as a support for the bowel on the abdominal surface. It is not necessary or advisable ot suture the skin, fascia or peritoneum to the bowel as adhesions will form within a few hours between the cutaneous abdominal surfaces and the bowel wall.

It is our practice to place the exposed loop of colon as high in the wound as possible so that it may be well out of the way in the event of further abdominal surgery for the removal of colonic disease in the pelvis, colon or rectum. The abdominal wound below the colonic loop is sewed in layers, and the skin closed with skin clips. The parts are dusted with stearate of zinc powder, pads applied under the ends of the supporting rubber tube, a dressing applied, and the patient returned to his bed until the bowel is opened forty-eight hours later.

The whole operation is performed in ten to fifteen minutes, and the patient is able to continue his nourishment without interruption. There is practically no post-operative pain, and the patient shows no reaction and gains several days over the one who had the same operation performed under general anesthesia.

If at any time during the operation, conditions arise which prevent its completion under local anesthesia, a short period of gas anesthesia will help out. This occurs, however, in a very small percentage of cases.

If one wishes to divide the spur of the colostomy by pressure necrosis at the time of bowel closure, then it is necessary to sew the two loops of the bowel together at their mesenteric attachment for three or four inches. We find it, however, unnecessary to do this, as when the time for closure arrives it may be done extra-peritoneally by simple invaginating suture under local anesthesia or without any anesthesia whatever.

After the bowel has been closed, it is dressed with dichloramine-T solution for four or five days. When healing is complete and the wound proved sterile by baterial examination, the peritoneal cavity is opened under local anesthesia, bowel replaced, and the wound closed by layers.

The principles to be observed in all surgical operations under local anesthesia are the conservation of the patient's peace of mind, the prevention of unnecessary pain, both operative and post-operative, the lessening of anesthetic shock, prevention of post-operative pneumonia, and nephritis, the shortening of the period of hospital confinement and detention from daily activities, the simplification of surgical technic and detail, the constant reiteration both in precept and in action, that the patient is the most important to be considered in any surgical operation, and the use of local anesthesia teaches the surgeon to perform every operation with the least handling and injury to the tissues. What he is forced to do in operating under local anesthesia, he becomes accustomed to do under general anesthesia.

DISCUSSION

Dr. E. M. Larson, of Great Falls, Mont.: It has certainly been a treat to listen to the paper that the doctor has just given us. It is rather an imposition, however, to ask one whose experience is so limited with local anethesia in proctology to discuss a paper that is so complete, and I will not take up much of your time, except to suggest that if the general surgeons would learn the technic of local anesthesia and do some of these operations without a general anesthetic, and thus educate the public that it can be done, we would as a result secure what one of the speakers emphasized this morning, the early treatment of disease. And in treating the local irritations that are so frequent in rectal conditions we might in that way be able to prevent carcinoma instead of trying to cure it after it has developed.

Dr. G. N. Pease, Portland, Ore.: The last point about passing a silver wire through these fistulous instead of cutting through as a good many of us have been in the habit of doing, not finding an internal, opening, and just blindly stabbing through the incising the sphincter and the tissues in general certainly is a great help in those conditions. As to suggestions about too much packing with guaze, which I am sure we all used to be instructed to do upon these so-called rectal abmethod in the healing of the sphincter and the tissues. It would seem to me that the field of local anesthesia is really in its infancy, as it were, and that we are going to hear more and more about it. It is bound to develop. I have been the patient under sprinal anesthesia is absolutely under your control. But it is not safe. We must develop our local anesthesia, as that is the safest method of all.

Dr. L J. Hirschman: I agree with Dr. Pease that local anesthesia is still in its infancy. I to put a part to sleep will do. We are going to work along the lines of safety first. In locating a fistulous tract by a silver wire probe, first inject the tract the same as you would for a radiograph, with Becks bismuth paste, with two parts vaseline and one part of bismuth, injected into the external opening. You will see the yellow paste coming out of the rectum, which indicates you have an internal opening; second, the location of the internal opening; third, and most important, it lubricates the tract, so when you insert your silver wire it slides right along through this vaselined area and very easily finds out for itself the internal opening even in a tortuous tract. Instead of lubricating the instrument you lubricate the tract. You will find oftentimes the probe won't go. First inject with bismuth paste or vaseline and the probe will go through very nicely. As far as gauze packing is concerned, when you pack a fistulous tract with gauze you get a U-shaped opening; when you don't pack you get a V-shaped edge which will heal from the bottom up, and you get a good function of the sphincter.

NERVOUS CONTROL OF THE THYROID GLAND

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There has been a great deal of interest recently about the glands of internal secretion, structures which are capable of determining, when they are out of order, whether a person be a giant or a dwarf, whether a male shall be a "sissy" or a real man, whether a female shall be a woman or a bearded lady. The structures which have this capacity obviously are worthy of consideration, but at the present time there seems to be a disposition to give them a degree of devotion, reverence and worship which is beyond all possible credence of physiologists.

The question arises as to whether these structures, which are commonly called the regulators, or the determinators, or controllers, of bodily processes, are the czars and kaizers of the body, which some people are inclined to regard them, or whether they, like other structures in the body, are under control. Now the physiologist does not regard any organ in the body as an autocrat or above control. Even the brain, which we commonly think of as regulating our activities, is subject in a marked degree to other conditions. A slight diminution of the blood pressure and the brain ceases action.

For ten years we have been interested in the physiological laboratory at the Harvard Medical School in seeing whether these glands of internal secretion are not subject to nervous government. The interest which we have had has led us to observe conditions under which certain parts of the nervous system will bring these glands of internal secretion into action, and I propose to present to you this afternoon evidence that the adrenal medulla, the part that gives rise to the substance adrenlin, is thus subject to nervous control; that the liver is thus subject, and especially I shall call attention to the evidence that the thyroid gland is likewise under control of the nervous system. Now, the part of the nervous system which will be brought before you for your consideration in reference to these glands of internal secretion is the sympathetic division of the autonomic system. You are well aware that modern anatomists and physiologists divide the nervous system into two general parts; that which governs the muscles connected with the skeleton, and that which is concerned with the viscera, the glands of the body and smooth muscles. Now, that latter part of the nervous system is the autonomic and it is divided into three parts, by the brachial and sacral enlargement is called the sacral autonomic, thing above the brachial enlargement is called the cranial autonomic; everything below the sacral enlargement is called the sacral autonamic, and that part which lies in between these two enlargements of the cord is the sympathetic.

Here is a figure (a cat in fighting form, with back arched, hair on end and tail erect) taken from Darwin's classical book entitled "Expression of Emotions in Man and Animals," and it shows from one end of the animal to the other and activity of the sympathetic division of the autonomic system. I told you this part of the autonomic system was engaged in causing contraction of smooth muscles. The erectores pili are smooth muscle, and when they contract it causes the hair to stand on end. You will observe this condition all along the back and to the tip of the tail. The next lanter slide will show how this system is related to the cranial on the upper hand and the sacral on the lower, described above. The ganglia lie along both sides of the spinal column. From these ganglia there are fibers which pass out. There are other fibers which pass down to the adrenial gland, and the question arises as to whether there are fibers that go up to the thyroid gland. You observe that these fibers are distributed to the surface and to the sweat glands and to the smooth muscles. Indeed, all over the body we have this distribution of sympathetic impulses and also to the salivary glands, stomach and pancreas and we have evidence recording their nerve supply of the liver.

I will now show you one of the effects which is produced when a peripheral nerve is stimulated. You are probably all aware that if you stimulate a peripheral nerve, such as the sciatic nerve or the brachial, there is a rise of blood pressure, that is, stimulation which in the conscious individual would be accompanied by the sensation of pain. Painful stimulation, therefore, will cause a discharge of impulses along this sympathetic division and will bring into action or suppress action in all of the structures which are supplied by filaments from this division. Now, the same thing will happen if the animal shows any signs of emotion or if there is produced a condition of asphyxia. These three conditions, painful stimulation, asphyxia, emotional exictement, will all cause a discharge of impulses along the sympathetic division.

We wanted now to find out, first, whether the adrenal medulla, which produces, as you are aware, the substance adrenalin, could be brought into action by stimulating an efferent nerve. We had to devise a method of showing whether this substance is liberated in the blood stream to a degree which will produce effect in organs of the body. What we made use of was the denervated heart. This is rather an important matter and I would like you to know clearly just what it means. Both vagus and sympathetic nerves are severed and both ganglions are removed. When this operation is performed in an anesthetized animal there is a complete separation of the heart from the central nervous system. Under these circumstances the heart continues to beat in the body wholly outside of nervous control. It will beat with almost unvarying regularity so long as the temperature of the animal remains uniform. Of course it is subject to substances coming to it in the blood stream. Now, if you introduce an extremely slight amount of adrenalin into the blood stream, something less than a thousandth of a milligram, it will cause a marked acceleration of this denervated heart. All you have to do is to introduce the substance into the blood stream and the heart becomes more rapid. This method can be used as an indicator of the presence in the blood stream of the substance adrenalin.

In this slide we have a record of the heart rate in an animal which has thus been prepared with the nerve fibers to the heart severed so that the heart is no longer subject to nervous control but only subject to control through the blood stream. The sciatic nerve is stimulated as you will observe here, and the heart rate, which was 188, to begin with, went up to 244 within thirty seconds. What is the cause of that increase in rate? Between that record and this record the adrenal glands were removed from the body and the heart rate fell down to 152. Now, the afferent nerve was stimulated just as before and there was no change in the heart rate whatever. In other words, we have evidence here that the rapid increase of rate of the denervated heart is dependent upon a discharge into the blood stream of the substance adrenin or adrenalin. It is possible to find out how much of this substance adrenin is discharged from the adrenal glands under painful stimulation, or stimulation which would be painful under normal conditions without anesthesia, by comparing the increase of rate when we stimulate an afferent nerve with the increase of rate produced by injecting a known amount of this substance. The brachial nerve was stimulated and the heart increased from 162 to 198, an increase of 36 beats a minute.

The next lantern slide will bring out whether this increase of rate of the denervated heart can be produced when there is stimulation of the nerves of the liver. What I am telling you this afternoon is just on the border line of advance. These results have just been published, and they have not yet had any wide circulation in popular medical journals. Here is an effect which can be produced by stimulating the nerves to the liver. The heart rate was 174 beats a minute and as a consequence of stimulation of the nerves of the liver the rate went up to 200, an increase of 26 beats. I have observed an increase as great as 46 beats a minute. Now, that is an effect that does not occur under ordinary conditions. As the next lantern slide will show you, it is an effect which is observed when the nerve to the liver was stimulated in animals which have been digesting meat or are in the process digesting meat.

In these cases the phrenic nerve was stimulated. The effect, however, is observed only when the animals have been undergoing or been carrying on the digestion of proteid material. I hove brought these facts regarding the activity of the adrenal medulla and the liver before you because they are of some importance in interpreting the effects which are obtained when the studies are directed towards the nerve supply of the thyroid gland. Innervation of the thyroid gland is a matter which is a very difficult study because of the fact that it has given no clear indications of activity in any experimental conditions. If you take adrenalin and inject it into the blood stream you get very marked effects, acceleration of the heart, diminished movements of the stomach and intestines, vasoconstriction, dilation of the pupil, erection of hair, and various other changes which are characteristic of this substance.

This stimulation of the nerve to the liver likewise produces an important and notable effect. Now, the question that arises, if we are going to get evidence regarding the innervation of the thyroid gland, is whether there is any way in which we could secure any sort of indication as to activity going on in this gland. It occurred to me some years ago, could we not make use of the fact that every physiological change taking place in the body is accompanied by the development of an electrical discharge. You are all familiar with this fact in the present day use of the electrocardiogram. We know that with every heart beat there sweeps through the whole body a wave of electrical discharge which can be led off through the hands, and which can be registered in the form of an electrocardiogram. That is a characteristic of the heart. Every muscular contraction, even glandular secretion, is likewise accompanied by a change of electrical condition and by connecting the galvanometer with the active organ it is possible to show the electric change that takes place.

To prove the statement that the secretion by a gland is accompanied by an electrical change, I want first to call attention to the effects which can be obtained by connecting the salivary gland, a gland of external secretion, with the galvanometer, and compare the electrical discharge with the producion of this external secretion. This black line shows the movement of the galvanometer. These dark vertical lines represent drops of saliva. You observe that almost immediately after the nerve begins to be stimulated the galvanometer shows an electrical change. Almost at once also there is a secretion of saliva, as indicated by these drops, 1, 2, 3, 4, 5, and so on, and, as the gland ceases to secrete, as indicated by the disappearance of these drops, the galvanometer comes back to its former position of rest. There we have an electrical change in a gland associated with evidence of external secretion. The question arose as to whether we could get any evidence of an electrical change in the thyroid gland which would lead to some sort of indication of whether there was a government of this gland by the nerves which the histologists had shown were present.

Let us see what evidence the electric method will give us in regard to the control of the thyroid. Here is the effect on this slide of the galvanometer when it is connected, one pole with the thyroid gland, the other with an indifferent point. The cervical sympathetic nerve trunk—that is the part of the sympathetic division which runs up the neck—is stimulated for about half a minute. You observe very shortly there is a movement of the galvanometer, and shortly after that it returns to approximately the former position. If the vagus nerve is stimulated—a nerve that belongs to the cranial division—no such change occurs. Now, these effects do not occur when the blood vessels are constricted so that the blood supply is shut out. In the case of the submaxillary gland they do not occur when atropin is given, and salivary secretion inhibited. So that I think we can take this electrical evidence as highly suggestive—at least highly suggestive of a nervous control of the thyroid gland by impulses coming to the gland along sympathetic channels.

Using this suggestive evidence from electrical methods, we went to work to see whether we could obtain further evidence on this theory. You are all aware that the thyroid gland has one of its most marked effects on the body when it becomes over active, and you get an increase in the rate of metabolism. The rate of the heart is dependent upon the rate of metabolism in its muscles and fibres. If you slightly increase the temperature of the body the heart rate will increase. That is due to the fact that an increase in temperature markedly accelerates the rate of metabolism, and, correspondingly, if we have an increase of the metabolic rate there is an increase in the number of beats per minute. Now, if it were possible to stimulate the thyroid gland by any means in our power it ought to result—if there is a discharge of thyroxin from the thyroid gland into the blood in an increase in the number of heart beats per minute in this denervated heart because of the fact that the rate of metabolism of the heart tissue would be accelerated.

Here you see the effect on the denervated heart of simple massage of the thyroid gland.

Here, then, it is stimulated at half-hour intervals. It is very gentle stimulation, and usually consists simply of slight manipulation of an instrument over the surface of the gland, and gentle tapping on the surface, a degree of massage which did not result in any extravasation of blood or ecchymosis, but only in a slight reddening of the surface of the organ. That was kept up for two minutes, at the end of the time—about five minutes later—there was no increase in the rate whatever. Nothing had happened. Then the rate of the heart began to go up and in about three-quarters of an hour it had reached the maximum in this case, about thirty per cent higher than the rate which prevailed before the stimulation begun. Here is a record which shows no marked variation if you allow the patient to remain for some time undisturbed, so long as you maintained an even temperature. Here for approximately two hours, nothing was done, and you observe that the increase in the heart rate varied only slightly. As a matter of fact, it varied between 208 and 210 beats a minute, and then there was a massage of the gland and immediately the rate went up.

You might suppose this increase of rate was not a direct effect of the substance given off by the thyroid on the heart but perhaps a stimulation of the adrenal gland by the thyroid so that there was an acceleration of the heart by adrenin set free from the adrenal medulla. But here was a case in which the adrenal gland had previously been removed, and massage of the thyroid gland, as you will observe, caused exactly the same effect as when the adrenal gland was present. The conclusion to be drawn, therefore, is that this influence came from the thyroid gland. It was not by or through the adrenals.

To show that this effect is really due to manipulation of the thyroid glands, I want to present to you this evidence obtained when we massaged the submaxillary gland so that you may know and compare the effect when we massaged the thyroid gland. At this point we massaged the submaxillary gland vigorously and you observe there was no effect during a considerable period in consequence of manual or mechanical manipulation of that gland. When we applied massage now to the thyroid gland, on the other hand, the denervated heart preparation shortly afterwards began to show the effects. It gradually increased in rate so that there was an increase from about 178 or 180 beats up to 214 beats a minute, where the increase remained for some time and then gradually came down. If this thyroid gland can thus be brought into action by mechanical stimulation the question arises whether it may not be brought into action by means of nervous stimulation, by stimulation of the cervical sympathetic trunk.

The next evidence I present brings out the testimony of actual experiment. We removed the thyroid gland on the left side the day before the experiment so that the operation might not disturb the heart and then applied our test. The left cervical sympathetic nerve is electrically stimulated as you observe for about five minutes, and there is no effect whatever—that is on the side with the thyroid gland removed. Now the same stimulation exactly is applied for exactly the same length of time to the cervical sympathetic trunk on the right side where the thyroid gland is present and you observe shortly after that that this denervated heart began to have an increased rate. It goes up from 180 to about 230 beats a minute, that is the acceleration arrived at in about 45 minutes, and then the heart slowly comes back to its former rate of beat.

In the case of certain animals, for instance, the cat, which was used in our experiments, the cervical sympathetic lies along side of the thyroid and there are branches going out to the thyroid from the cervical sympathetic, and lying here is the origin of the phrenic nerve, the nerve that goes to the diaphragm. Every time the animal breathes there is a discharge of impulses from the central nervous system through these fibers to the diaphragm. It is possible to cut that nerve off and turn it around, and now by cutting out a piece of the cervical sympathetic in this way and hitching on the phrenic nerve to the cervical sympathetic, you can readily understand that every time the animal breathes after these fibers have grown together there is a discharge of impulses now, not to the diaphragm, but to the area of distribution of the cervical sympathetic.

I performed that operation on a series of of animals some years ago in the last of April or early in May and then went off for my summer vacation. When I got back my laboratory boy said: "There is an animal upstairs that is acting differently to any animal I ever saw act before. I have put out milk for it and it will run to the milk and put its nose down into the milk like a pig. I throw out meat to it and it goes for the meat, and then I put out other food and it goes for that. It runs away from other animals when anyone comes into the room. It is eating like made and losing weight." I went up and saw this extraordinary animal, and put him side by side with another animal of the same weight. We measured the food each of these two animals ate during a week, and at the end of the week this animal which I have just described had eaten food representing three thousand calories more than the other animal had eaten, and notwithstanding it had lost weight. Now, furthermore, this animal and other animals which had the same condition were characterized by being highly excitable. They were at first laboratory pets, purring about us, rubbing their fur on our trouser, showing signs of familiarity. Instead of continuing thus they became furtive, running about the room, hiding under benches. They had a very marked increase in heart rate. The ordinary rate of the cat is about 150 beats a minute. I have an electrocardiogram of one of these animals with a rate up to 260 beats.

Now I will show you another characteristic observed in one of these animals. If I could cover up that side, you would see that was a very mild cat. If I could show you only the other side, you would probably say that it was a very excited cat. Not only is the eye opening about 25 per cent greater, but the pupil is considerably dilated as compared with the other normal pupil. In one of these animals when we brought him into a dim light to do away with the light reflex, we could observe a rhythmic pulsation of the pupil with every inspirtion. In other words, as the animal breathed, there was a wider opening of the pupil rhythmically occurring with each inspiration. Perhaps the most characteristic change which we observed was an extraordinary increase in metabolism. Here is the animal which I told you about, which showed this extraordinary behaviour when I returned from my summer vacation. It had an increase of metabolism amounting to about 125 per cent above normal.

Such then is the evidence which I have to bring before you regarding the control of the thyroid gland and, in addition, the control of the adrenal medulla by the sympathetic nervous system. This evidence, so far as the use of the denervated heart is concerned, has been perfectly clear cut and has been repeatedly observed. Now, curiously enough, we wanted to develop evidence along new lines and we performed the experiments again in March and April of this spring. To our astonishment we found we got only minor results. In a few instances there was almost no effect. That was very disconcerting I assure you. Then it occurred to me that in the literature there was evidence that would account for that. Certain investigators studied the iodin content of the thyroid gland in animals that came to the stockyards and found that during the year there was a very marked variation in its content. The low period is in March and April and the high period is in September and October, and in cattle the amount of iodin in the thyroid gland in March and April may be only one-tenth of what it is in the fall months. You perhaps know here in the western part of the United States of the interesting observations which have been made on hairless pigs, with brittle hoofs and other indications of a defective thyroid condition in the new born—a real cretinism. Now, the sows that give rise to these hairless pigs in the spring, in March and April, will give birth to perfectly normal litters in the fall months when they have a more adequate iodin content in their glands. We are waiting with a great deal of interest till the fall to repeat these experiments to see whether the observations which we made before in November and December and which we found were quite different when we tried to repeat them in March and April, will show even more marked effects when we repeat the observations in the months of September and October, which are the most favorable times.

There is nothing more full of possibilities and of anything that is more full of possibilities and clinical interest than these seasonal variations in the glands of internal secretion. We are well aware of seasonal changes in birds for example, in certain of the domestic animals and deer. There are definite breeding seasons and these breeding seasons are definitely associated with the periods of the year. In a similar way the thyroid gland is markedly influenced by seasonal conditions, and this big sweep which runs through the year may have relations with the most fundamental conditions in our life. Recent studies carried on in school children have shown that the rate of growth of school children in the fall months is four times that which it is in the spring months. Whether there is a correlation between the difference in the thyroid under these circumstances and the rate of growth is not yet determined, but it is highly suggestive that this relation exists, because we know the very profound effect which the thyroid gland is capable of exerting upon growth. Possibly the larger amount of infection which is noticed in the winter months and the early spring months is associated with this variation in the iodin content of the thyroid. I throw out these hints because of the fact that historically most of the important advances in our knowledge of internal secretion have come from clinical study. Men who are engaged in clinical medicines have opportunities for making observations of this sort, have cases brought to them which we cannot duplicate in the laboratory, and if any of you feel stimulated by any of these possibilities to carry on investigations of this very interesting subject, the study of thyroid conditions, I should be more than gratified.

DISCUSSION

Dr. John Hunt, of Seattle: There are a few clinical observations which may help to bear out and posibly prove some of Dr. Cannon's work. The symptoms which go with pathological changes in certain cases of toxic goiter are practically all manifestations of symptoms coming from the cervical sympathetic. We have nervousness, tachycardia, increased metabolism, and exophthalmos, which can all be tracked back to the sympathetic nervous system. On the other hand, it is hard to explain how by a simple superior thyroid pole ligation you improve an exophthalmic goiter. The heart will become slower, the patient will put on weight and become less nervous. Also it has been my observation that if you can apply the ligation before the patient has had an exophthalmos, under nine months, you can obtain a record of improvement up to say ninety per cent, but, on the other hand, if the exophthalmos becomes fixed after a year's time, improvement by surgical procedure is not more than ten or fifteen per cent.

Dr. W. Gerry, of San Francisco: Dr. Cannon's work on the thyroid, the linking up of the nerve connection with the adrenal and with the thyroid, is a classic. It is just as much a classic as some of the earlier experiments in physiology. But there are so many new things coming out that these are forgotten or overlooked. I remember the great interest that he excited a number of years ago particularly when he connected up the phrenic nerve with the cervical sympathetic in the cat and developed exophthalmic goiter. He has thrown a lot of light on the etiology of it. You have to think of exophthalmic goiter as a symptom-complex. Now, then, one factor is certainly nerve influence. As Dr. Hunt has said, we don't understand just why ligation of the superior pole will influence exophthalmic goiter, but haven't we the explanation right here in Dr. Cannon's paper. Is it not largely because of the influence on the nervous control of the gland. If you tie the superior typroid artery you will see only a momentary diminution in the amount of blood that is coursing through that artery, because it is linked up with the inferior thyroid, and your blood stream comes in almost immediately. There is very little change. It is only a momentary change. What have you really done? You have done something to that autonomic nervous system that will influence that thyroid. It will diminish its output of thyroxin. just one thing I want to ask Dr. Cannon if he has injected the sympathetic nerve in the neck with a local anesthetic before making his experiments on the denervated heart. I am wondering whether that would stop or in any way influence the output of thyroxin in the blood stream, because it is evidently thyroxin which keeps up the pulse beats after the adrenal stimulation is over.

Dr. Cannon: It seems to me there is the possibility of two vicious circles in the development of ac ondition such as exophthalmic goiter, if I may take the evidence which I presented today as bearing upon that condition. First, that through the activity of the thyroid gland itself there is an increased instability of the central nervous system so that trifling events of daily life no longer are trifling, but are magnified, and cause, therefore, still further discharge of sympathetic nerve impulses which influence the glands and thus we have a vicious circle set up through the nervous system. There is also the possibility, it seems to me, of a vicious circle being set up through the blood stream because of the fact that with the increased activity of the thyroid there is likely to be an increased activity of the adrenal medulla, and the substance given off by the adrenal medulla, adrenin, is capable of doing just what the sympathetic nerve impulses do, namely, stimulating the thyroid gland itself, thus producing a greater activity of that gland. Therefore, you might have vicious circle through the nervous system and another vicious circle through the circulating system.

With reference to pole ligation, I probably

neglected to give the explanation that Dr. Terry has suggested. We all know that ligation of a blood vessel to any part where there is an anastomosis at all promptly leads to a development of collateral circulation so that the part is not deprived of a proper blood supply and precisely that thing happens in the case of a thyroid gland. What does occur, however, when the artery is tied, is that there is an interruption of the nerve fibers and they are no longer capable of functioning and you thereby deprive the gland of the impulses which have been rendering it overactive, or at least in certain cases. I do not pretend for a moment to claim that overactive sympathetic stimulation explains all cases of exephthlamic goiter or hyperthyroidism.
under stress of circumstances in military life.

I have not injected a local anesthetic in the cervical sympathetic in these observations on the thyroid gland. I am quite sure that if a sufficient amount of local anesthetic was injected to produce a blocking of the impulses that there would be no effect such as I have described.

ARTHRITIS

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In attempting to give you a clinic on arthritis I will present a few cases. This childd is twenty-nine months old and in January the mother noticed a swelling of the left knee, the first evidence that the child had any illness whatever, and a little later the left ankle was somewhat swollen, and still later the right ankle, but no great evidence in either of those two joints. The left knee became sore with swelling. She had a very slight disturbance of temperature with it. The mother knows nothing of any previous illness of the child, related to this joint infection. Before and since that the child has suffered on three occasions, she states, with colds and purulent discharge from the nose. And on one of those occasions there was an enlargement of one of the submaxillary lymph nodes on the right side, which lasted but a few days. Examination of the child shows nothing but this. She was examined by an orthopedic specialist to see if it was possibly tuberculosis of the knee. It was decided after taking a radiograph of the joint that it probably is not tuberculosis. I saw the child yesterday and, in as complete an examination as could be made at one sitting, found that the knee cannot be full extended. The child resists and partly holds it, but overcomes the resistance with some evidences of discomfort on her part. There is a thickening of the synovial capsule of the joint. When one grasps the knee apparently you can force fluid into the upper part of the synovial sac. There is nothing in either ankle, nor is there anything in any other joint. The child's tonsils have never been infected as evidenced by soreness of the throat on the part of the child. The sinuses of the head have not been examined. She is only 29 months of age and therefore we could not expect infection of the dental appendages of the mouth. Now, this I would diagnose anatomically as chronic synovitis. It has steadily grown better month after month until at this time the child is much better than at any other time in the six months of disability. The only treatment given has been to keep her from using the knee by bandaging, and salicylate of soda which she has taken without any discomfort and apparently with benefit.

This man, who originally came from my home town, acquired his disease in Chicago. His trouble began twenty years ago with soreness in both feet and ankles. He consulted a physician about it and had treatment. Following that he became no better and a part of his treatment in one hospital which he attended consisted of sweats for the purpose of detoxicating him. Then he was taken to another hospital where he was given injections of some sort. He can't tell anything about that. At any rate he had injections per rectum of some sort of material, and he doesn't recall whether he had subcutaneous injections or not. He grew no better. He remained an invalid and the trouble extended to the wrists and hands, and he came to Spokane. Since he has been here he has been in the hands of many people, including oestopaths and chiropractors. He has had a good many forms of treatment. He finally had his tonsils enucleated, and he had some teeth out late in his history. Under whatever treatment he was given temporary improvement occurred, but at no time was he ever much better, and the moment any kind of treatment has been suspended he has gone back and even been a little worse.

He has involvement of feet, ankles, knees, upper extremities, particularly the fingers, the metacarpals, the wrists, the elbows, and recently some of the cervical articulations. His hips are not involved, his shoulders are somewhat involved, apparently not so much in the joint as in the shoulder girdle muscles. On examining the changes that have occurred anatomically at any point he presents conditions that are mutiple at the present time. You can see by the form of the hand. It is the hand we ordinarily classify as a chronic arthritis of the deforming type. The fingers are thoroughly characteristic. There is enlargement of some of the joints in spindle form. The fingers can be straightened out, but at the same time they are not upon one plane. The extensors are very flexible. The terminal phalanges may be bent backward far more than normal, probably further than a man in a laborious occupation ordinarily could. That is one type of joint. There is no movement in the second joint of the index finger. This other joint is practically so in the same hand. This metacarpal is very movable, as you see. It moves in all directions. This joint of the other hand is one of the joints I found yesterday was grating so that one could hear it at a distance. His wrists are almost completely anklyosed. At the same time the radius and the ulna are fixed at that joint. The shoulder is less much involved. His biceps tendon is as tense as a fiddle string. In other words, he cannot extend the forearm because of the shortening of this biceps muscle. That is a common thing. Passing to the feet, the same condition is found as in the hand. His metatarsals, part of them move freely and some of them don't. The toes move freely. There is nothing there except some variations in the great toe probably due to short and tight shoes. The ankle is thickened but is movable in all directions. The other one is the same. His knees are involved. The joints are generally sore. His spine is not involved. He walks with crutches and can hobble around.

Carrying weight upon a joint makes it more vulnerable to infection. Practically every patient with a knee infection for any length of time will flex the leg. Flextion allows in time shortening of the muscles, and, by and by, these people cannot move their joints, cannot extend their legs. The upper extremity is not naturally bent to relieve tension so much as it is a natural position, but in this disease there is one muscle that particularly contracts about the upper extremity, and that is the biceps muscle, and that contraction is not due solely to the position but is partly due to infection. Some of these groups of muscles, especially the biceps, are more susceptible to infection with the same organism that affects the joint. When the flexors of the toes are infected and contracted the terminal phalanges of the toes will be drawn downward. There is no reason for them to contract to relieve the tension in the joint, but they contract because of infection. If in any of these conditions when you are making a study of this disease, and pieces of tissue are taken out these contracted muscles, you will find evidences of infection both by the presence of the organism in the muscle and scar tissue.

The family history is entirely negative in this patient. Has had three children, a curettement in 1908 for a run-down condition; tonsillectomy in 1921; she complains chiefly of joint pains and swelling. She had the usual diseases of childhood, no severe illness, and never had tonsillitis, no nasal discharges, does not catch cold easily. First sysmptoms began in May, 1920, she suffered pain in the bottom of the feet. Joint after joint became involved. During this time she had no temperature. Her physician advised removal of her tonsils, which was done in 1921. Following this operation there was no improvement. Since the onset of her trouble she has had intermittent attacks; one joint after another becoming painful. Radiographing the teeth in April, two showed evidence of slight involvement and were extracted, after the extraction the right knee began to swell, and grow painful.

I do not want to take up all the time exhibiting patients but I want to tell you some of the principles involved. She says her soreness is felt in the bottom of her feet. There is a grating in those toes, so there is some involvement in them. The knee is swollen. I can force fluid into the upper part of the joint. The knee cap is movable and there is no grating in the knee. She shows the characteristic spindle joint fingers. These are evidences of periarthritis. I am particularly calling out the anatomical condition to you because in the books and everywhere else there is much made of the nomenclature of arthritis. We will restrict ourselves to infectious arthritis.

We will discuss the chronic type, which means the non-suppurating type. The moment arthritis is suppurating, if the organism is virulent enough to cause suppuration, it is usually acute. But even then the infection may become chronic in type with abscess formation. This type of infectious arthritis though never suppurative unless arising from mixed infection.

A few years ago doubt was expressed among physicians as to the source of infection or as to whether most cases of arthritis were infectious. No one who has had opportunity to study a large number of these patients disagrees with the statement that these cases of arthritis are infectious in type and that they arise from some source of infection somewhere in the body. That is now an axiom; it is a principle which everyone accepts. We have to consider that any organism that is pathogenic may cause this type of disease. Usually the organisms are streptococci, they may be gonococci, or some other type. In other words, it is in its beginning and in the progress of arthritis there is bacteremia. Many times there is also infection of the blood through the lymph channels and the lymph nodes in the individual; secondary evidence of a primary infection, wherever that may be. You must get it fixed in your mind as a principle in this disease, that it is infectious, arising from some primary focus in the body; that it causes a bacteremia intermittent in character as long as there are any organisms in the body; that it has a predeliction for certain tissues

A Scandinavian was reported in 1902 to cultivate in his laboratory a strain of streptococcus and by growing it on kidney he was able to have it take on attributes which made it go to the kidney of innoculated animals. He was able to take that same organism from the kidney and bring it back to its original state of a streptococcus losing all its affinity for the reduce. So in the joint infections. Bacilli must have a tropism, otherwise they wouldn't go to the joints, but would go somewhere else. In some cases and tear. You see in these patients I have presented you certain anatomic conditions. In the books they are divided into synovitis, periarthritis, osteo-arthritis and hypertrophic and atrophic arthritis, and you are expected to classify them in that way. For the changes that go on in the joints usually include both hypertrophy (overgrowth of bone, cartilage, and redundant tissue) and atrophy, that is, absorption of bone and cartilage.

You see hypertrophic and atrophic arthritis in the finger points of the same hand. Richardson and Nichols made a report in which they made the statement that as far as the anatomical pathology of the joint is concerned, there is no means of differentiation between the hypertrophic and atrophic form. They are different phases of the same process. You have simply got to classify them as chronic arthritis of the infectious type. Now, the diseases is progressive, some cases more rapidly progressive than others, and there is only one explanation for that. I believe the disease to be due to an infection somewhere in the body, localized, producing bacteremia, and the patient is in such a condition that the pathogenic organism in the sinuses, tonsils, teeth, prostate gland, in the appendix or gall bladder, somewhere in the body, has a particular tropism for the joints at the time the bacteremia occurs. Unless that infection is removed it is going to continually attack the joints and therefore the arthritis is going to progress more and more. Rosenow, working in our clinic, in the splendid work he did in clinical bacteriology, working with us hand in hand and with the help of the surgeons, showed what damage those organisms did when they reached human tissues as well as in experimental animals. In bacteriemia the organisms lodge in the smallest blood vessels of the joint, where they cause a reaction; that reaction in the blood vessels means an obstruction. That means that the wall of the blood vessel is injured and hemorrhage occur in the articular tissue and synovial membrane.

The point of attack depends upon the particular blood vessels which become the seat of the emboli, whether they are the nutrient vessels of synovial membrane, joint capsule, cartilage, or bone itself. By this hypothesis you have got in a sense an infection of the bone just as you have in tuberculosis of the joint and in time that results in osteo-arthritis. At the beginning this is only just an infection, or result of infection. What else occurs? If you can fancy these organisms destroying blood vessels you can assume interference with nutrition of those tissues. Not only that, but the little hemorrhages make scar tissue and more blood vessels are destroyed and the circulation is further interfered with in that way. If that goes on long enough the blood supply is hindered to a considerable degree, and as a result of that want of nutrition you will get always the same result in those joints.

A German, in 1912, studying this question of nutrition of joints, operated upon dogs under antiseptic conditions and by blocking the nutrient artery or nutrient canal in the bones that enter into the knee joint of the dog was able to produce a non-infectious metabolism in the joint with all of the bony changes we see in these patients. What does that all mean? We have evidences of poor circulation causing poor nutrition, resulting in faulty metabolism in which the four tissues belonging to the same embryonic series revert to the lowest of the four tissues in type, fibrous tissue. That is the reason. The fibrous tissue entering into the tendons and the ligaments, cartilage and the bone, forming the joint, are all from one common origin. So that changes that go on progressively in these patients are the result of the infection of the joint, which disturbs and destroys blood vessels to some degree and interferes with the blood circulation, materially interfering with nutrition of the tissues and finally results in this retrograde metamorphosis in the bone. What does all this mean? It means unless we can get these patients early, unless we can remove the cause before all of these disturbances occur, that we cannot accomplish anything in their treatment.

The first thing with these patients is to get the right cause. When you have removed this cause there won't be any more bacterema from that source. You don't know how mainy lymph nodes are enlarged in the body, they may be in the chest, in the throat, they may be in the mediastinum. You are going to try to build up the resistance of the patient because you cannot get at them with a knife. How are you going to build the resistance of the patient so he will overcome infection remaining in his body? Are you going to do it with a specific treatment? I don't think you will with a vaccine. In a series of patients we have treated alongside of patients who had vaccine, the unvaccinated got along just as well as the others. Are you going to do it with more specific substances you don't know anything about? That is protein substances or known specific proteins, egg albumin, bacterial albumin, milk, some used intravenously, causing that uniform reaction, with fever and chill. Some of the patients get better. Why? Immunologists and those who work at it may have given treatment that mobilizes all the defenses of the body, but they don't know it. Some patients die under the treatment, so we want to go cautiously about that. If you have a desperate case and have done everything else then perhaps you may use it.

But what else are you going to create in that individual all of the natural resisting power he has got. Build him up. You are going to give him good air and good food. One thing we find about these patients is that, like other chronic patients, not peculiar to arthritis, that because of disability and inability to get out and exercise, that the metabolism and digestion or assimiliation of some foods is not as good as normal. That is the carbohydrates, meats and everything else within reason they will take. Some of them cannot take care of as much carbohydrate as if they were well. I don't know that it does any harm to give it. You are going to keep them as happy as possible. That is a difficult thing to do. You are going to give them rest, and that rest is an individual concern. Now, all that physical treatment itself, all you are trying to do besides build up this patient is to restore general circulation and local circulation. These are the things you want to do and keep up if you are going to relieve your patient's body of infection, if you are going to help restore circulation, nutrition and prevent this retrograde metamorphosis.

HIGH VOLTAGE X-RAY THERAPY

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In this discussion of high voltage x-ray, in the treatment of malignancies seated deeply, I hope I will not be understood as recommending a single treatment for cancer. Some ten years ago when I took up the work of x-ray my first resolution was that I would not do any therapy. Very soon I found I had to defer to the wishes of certain friends who had malignancies they wished treated, cases that were beyond the aid of surgery. These cases of course were treated by what we called the old method of low voltage and in most cases we secured a certain amount of alleviation. The majority of them went along and died after the period of relief. No doubt you have all been reading about the subject of high voltage x-ray which was developed in Germany during the Great War. I have had the privilege of visiting the clinics of Germany, particularly those of Friederich, and of Braun. I will not burden you with a discussion of my observations there, further than to say that the net result seemed to be very good indeed. Of course in visiting a foreign clinic we always have to take into consideration the fact that we are relying on just seeing the patient today. We take it for granted that the history of the treatment as given us is correct. I was privileged to examine many patients that were reported to have been advanced malignant cases five years before, which had been treated by this new method of high voltage x-ray. In most of these cases no radium was used whatever. Many of these cases were well at the end of five years.

In the use of radium or x-ray, particularly in the use of radium, to destroy a cancerous cell, we must bring the radium in almost direct contact with the part being treated in order to secure the proper intensity. Practically all malignant cases that the radiologist is called upon to treat are advanced cases, in which the lesion is no longer local. In most cases we have cancerous cells in several inches of scar tissue. We will say it is four inches. We will bring our radium into contact with the surface and these (indicating slide) are the radium rays going out from the radium and penetrating the first inch. We have eleven rays, we might say eleven million rays. By the time we reach the fourth inch of tissue we only have four or five. We have lost most of it by divergence of the rays. We find only one-fourth of the four inches has been touched properly, so we have stimulated the disease rather than given a sufficient demonstration to destroy the malignancy. But if you take a large quantity of radiation, such as from the high voltage x-ray the circumstances are very different. Here, then, are your rays coming from your x-ray tube. In passing through that four inches of tissue it will be noted we have just as many rays in the fourth inch of tissue as we have in the first inch of tissue. We are using a proper divergence from the greater distance.

There are other definite advances in this treatment as important and just as clear as this diagram illustrating the advantage of the greater distance to secure proper divergence. We will say we have a case of malignancy about the tonsils with metastasis. Here is a case treated by radium. By the time we reach the median line we have lost the greater part of the rays by divergence. If we do it by x-ray we get an even radiation entirely through the tissue. It has been determined that a voltage of 200,000 can be used for the production of x-rays. They are of shorter wave length than the longer gamma ray, so in high voltage x-ray the physical qualities of the ray are not greatly different from that of radium, and the biological effect is probably not materially different. In a high voltage x-ray tube, it is estimated that there is an amount of rays equal in volume to that which comes from 100 grams of radium, or about ten million dollars worth of radium or more. I don't mean to be understood as discounting the value of radium. Radium is certainly valuable in certain cases, more valuable than x-ray.

Let me present this cross section of a pelvis of a woman with carcinoma of the cervix. If the carcinoma is confined to the cervix itself, which is seldom the case, it is by the old method of treatment possible to deliver to that carcinoma sufficient radiation to destroy it. If there be a metastasis, which there usually is, represented by this large shadow here, you will notice the lines going through from the x-ray tubes, but in this instance with radium very few of them reach it at all. So we might destroy the malignancy about the cervix and yet leave it in the broad ligament. That has evidently happened many times. If we use distance, a single quarter of an inch or two or three—of course the ideal way would be two—the results would be improved but you cannot always do that. This is the cross section of the same pelvis. Here is your malignancy of the cervix. There is the case in which you have metastasis. If you notice the lines coming through it show that all the tissues of the pelvis are quite equally and evenly radiated.

I thought a summary of the impressions gained in the actual use of high voltage x-ray might be of interest. In our work during the past year we have treated about 300 patients. We begin with the class of patients with which we have had the poorest success, carcinoma of the rectum. But our results there, however, have been better than we have been able to secure with radium alone, or by the old method of x-ray. We have adopted the plan of having a temporary colostomy at the outset and giving the treatment afterwards. In carcinoma of the prostate our success has been particularly good. We have treated 18 cases of carcinoma of the prostate, all cases sent to us by the surgeon, hence all cases inoperable. Practically all very much advanced. After a year no case is dead; all cases are improved; most all cases are markedly improved; they gain weight; by examination the masses of malignancy are reduced.
one year. None of our cases are dead.

Carcinoma of the lung. We have treated four cases. The results here have been very good. We adopted the method of withdrawing the fluid, doing an artificial pneumothorax, and then giving a treatment. The pain is relieved and three of the patients have improved very much. They were carried into the hospital on stretchers to get the treatment, and are now up doing their work.

Carcinoma of the female pelvis: We have treated carcinoma of the fundus and about 30 cases of the cervix. Some of these cases may have been classed as operable because they no longer operate on carcinoma of th cervix regardless of how they have been treated. The results here, however, have been good, and even in the most advanced cases where we had marked metastisis, marked broad ligament pain and so on, we have been able to relieve that pain. The patients have gained weight and from indications most of them are doing well.

Probably the most satisfactory results we have been able to obtain have been in carcinoma about the neck. We have had eight cases of carcinoma of the tonsil. These cases have received a very large dose of radiation from either side. We protected only the brain cavity, giving all the tissues to the base of the brain down to the shoulder a massive dose of x-ray, about 125 per cent of what is ordinarily a full dose. At the end of about two days these patients become very nervous, probably due to the intense radiation of the base of the brain and spinal cord. This passes away in a few days, however, and after about a week, at the same time the reaction occurred on the skin surface, there was also a reaction in the mucous membrane of the mouth and throat. It usually cleared up within two or three weeks, the swelling and symptoms disappeared, and the results in these cases have been particularly good.

Now, I will say a few words about the supposed danger of high voltage x-ray treatment. You have all heard about it. Before I went to Europe a good many told me there was 70 or 80 per cent of the patients treated by this method died as a result of that treatment. I was told further that one of the arguments for the treatment, was that there were no mortalities and that they had reached the point in a number of clinics where they did not operate upon any malignancies, but treated them all with high voltage x-ray.

I have skipped about, merely touching the high spots in this discussion. But I want to end with this remark, that so far as the application of radiation and the destruction of malignancies seated deeply, are concerned, the physical problems of delivering the dose sufficient to destroy this malignancy have been solved. There are yet some biological problems that are before us, and the one great biological problem before us is the sensitiveness of malignant cells to radiation. Some cells we know are more sensitive than others, like many people to sunshine; some more sensitive to the sun's rays than others. So are malignant cells to x-ray. Say that a 100 per cent dose is sufficient radiation to make the skin turn red in a certain time, that seventy per cent of that amount will destroy the average sarcoma, or from 75 to 90 per cent of that amount will destroy the average carcinoma, that muscle tissue will stand 180 per cent of that amount. According to some authorities practically all normal tissues of the body are more resistance to radiation than pathological or cancer tissues.

DISCUSSION

Dr. F. S. Bourns, of Seattle: There is little to add to this straightforward and clear exposition of modern deep therapy that we have just heard. It seems to me that it gives us the practical straightforward facts that we are looking for, the recitation of actual experience working along lines as laid down by the originators of the method.

I feel the physical problems have been solved. I feel that the physicist has given us a machine that will deliver all of the x-ray we shall ever be able to use, but that the great problem that remains to be solved is the biological problem. If, as we heard this morning in the excellent address by Dr. Bloodgood, we could educate the public to that point where all cases could be discovered in their incipiency we know that the problem would be solved by surgery alone, or as I believe by radiotherapy alone, but we have not been able to educate that public up to the present time; we have not reduced the existence of malignant diseases in the public. Our statistics show us that the percentage of deaths from malignancies is increasing practically all the time and therefore we have got to avail ourselves not only of the education of the public but we have to go on working and striving to find something that will help more of the cases that do not report themselves to us in time to avail themselves of the earlier methods of treatment. And inasmuch as the physicist has solved his problem it seems to me that the future lies in the hands of the internists. We would have to take up these very points that Dr. Milwee was just speaking of and try to determine first, if possible, if there is an index of any kind that will tell us beforehand how heavy a dose we can give to the individual, and, next, if there is anything that we can do to reinforce the resisting powers of the individual so that we can bring that dose up to the proper lethal dose. It calls for individual investigation all along the line and I believe that those investigations are in the hands of the internists. We have got the dose; we can I believe get from our tubes enough ray to kill almost any, or cause to disappear, let me say, almost any tumor in the body. But sometimes after the disappearance of the tumor the patient just fades away and passes out. I do not believe the advent of deep therapy is going to render radium entirely obsolete. I believe it is going to be used in the future along with the deep therapy and to the decided advantage of the patient. We are very far from having a cure for cancer.

Dr. Ward, of Spokane: If I brought out a knife, and told you that the knife would cure cancer, that knife would do this or do that, you would think right away before I called your attention to it it makes a difference whether it is in my hands or Dr. Bloodgood's hands. It is the man behind the machine that counts. It is the study of the work and the attention he has paid to details, because it is all a matter of details and just giving the whole of oneself to the work. In that way the speaker has got results which are really extraordinary. He spoke of the dangers. I would like to speak of a few complications we have, which are not really due to the treatment. For instance we had a patient in the hospital a couple of weeks ago who developed a bed sore. Radium had been used in the vagina following operation. The patient came right down to me worrying about a radium burn.

Substitute reaction for the work burn. If you are in doubt call up the x-ray man and ask him about these troubles. Be careful what you say to these patients. There is very often a metastasis occurring in a portion of the body which has not been treated; it is making the patient very ill; he is having symptoms hed oesn't understand and he immediately attributes them to the x-ray treatment.

Dr. Millwee: I wish to thank the gentlemen for their liberal discussion. For twenty years we have been destroying malignant cells on the surface of the body. Fifteen years ago 98 per cent of all malignancies on the skin were killed by x-rays. It is true of radium. I hope nothing I have said will cause anybody to construe it as meaning that I disapprove of radium in the least. I think radium for surface lesions, for local lesions, will be more and more in use in the future. But where your malignancies have metastasis it is impossible to reach them with radium and a very great mistake is being made to attempt it. I want to say this in closing, that if all the patients I have treated I should find dead when I return—maybe some of them are—I would still feel that the work we have been accomplishing has been worth the trouble.

PERNICIOUS ANEMIA, ALKAPTONURIA, HEMOLYTIC JAUNDICE, ORTHOSTATIC ALBUMINURIA AN PERNICIOUS ANEMIA

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I am going to take three cases this morning instead of the four on the program, and one is is somewhat different from what is put down on the program. I will start with the patient with alkaptonuria and orthostatic albuminuria. There is nothing in that patient to demonstrate as far as the patient is concerned and it is not necessary to have the patient here. The interest is entirely in the urinary changes. The only point of any interest in the history really is in the family, and this patient is a young lady of 18 who has this condition of alkaptonuria and a brother also shows the same condition. There are other members of the family who presumably also show the urinary changes.

This alkaptonuria really is not a disease. It is a freak of metabolism. It has, however, a certain practical importance, namely that it is often confused with diabetes because the alkapton substance in the urine reduces Fehling's solution in much the same way that glucose does, and most of those cases that have been discovered have been discovered either as a result of the urine turning dark on standing or as a result of the patient's applying for life insurance and being turned down because of the urine reducing Fehling's solution. Now, there are certain points which distinguish it from glucose. The most striking difference is that it is not a sugar and is not a fermentable substance. So if in doubt, in a patient who is apparently well, whose urine reduces Fehling's solution, the easiest and simplest test for the physician to carry out would be to put a little yeast in the urine, put it in a warm place back of the kitchen stove or the radiator, and see whether fermentation takes place with the formation of gas. The other differential point lies in the fact that unlike sugar it does not change with a bismuth reagent or Nylander's reagent. With another reaction it causes a whitish precipitation. The technician has been good enough to do these tests for us and you can see here very distinctly the difference between Nylander's reaction of the left, which is clear, and the reduction of the copper sulphate and alkali solution. I think you can all see very distinctly turbidity in the one and clearness of the other.

Now, then, alkapton means an affinity for alkali, and it is the discoloration of the urine on the addition of alkali, or the formation of alkali as the urine stands, that has given the name to the condition. You can see in this tube how that works out. There is another reaction, a change to a bluish color with ferric chloride which is given by some of the cases, but apparently not by this patient, so there is no reason for the negative test being tried for you with that solution. Now, I stated this was a freak of metabolism. These chemical formulæ on the board represent the metabolism that ordinarily and normally takes place in the oxidation of tyrosin, this being derived from protein substances either of the body or of the food. We start with tyrosin and intermediate products and we get homogentisic acid or alkapton and it is the presence of this in the urine that gives these various reactions and it is the failure of the next step—when the breakdown takes place—that constitutes the freak of metabolism in this condition. I have represented that by a red line showing that metabolism was blocked or stopped at this stage and there appears in the urine homogentisic acid due to incomplete oxidation of tyrosin owing probably to the diminution observed of a specific intracellular oxidose.

Now, the metabolism of this patient has been studied by Dr. Anderson and his associates very carefully and they have found on a diet which contains 70 grams of proteid this patient excretes in the urine 4.18 grams of homogentisic acid in the period following ingestion of 70 grams of proteid, and the total nitrogen of the urine is 7.8 grams. Now I have put down here on the board 3 to 6 grams as the average normal excretion of this substance in this particular type of individual that occasionally goes with excreting as much as 16 to 18 grams per 24 hours of the homogentisic acid.

Now, occasionally these patients have disturbances that may be regarded as disease or ochronosis. This particular patient would be recognized as being abnormal only when the urine was tested in these ways and these reactions were obtained. In many of these patients, however, the cartilages of the body become blackened so that they show dark or purplish or even a black color particularly easily seen in the ears, the cartilages of the ears, and occasionally cartilage of the nose. Sometimes it is marked enough in the cartilage around the large joints to show the discoloration there. Associated with this change they very frequently have arthritis. And arthritis is the disability which this group of patients show if they show any disability. The dscioloration of the cartilage might be regarded as an abnormality and the arthritis as a disability, but the majority of cases are merely freaks of metabolism with the appearance in the urine of a substance that normally would be broken up and not appear in the urine. Now, if tyrosin is fed to these patients they excrete homogentisic acid in ratio to the intake of these substances, which goes to show that is the origin of the particular homogenisic acid which appears in the urine.

Also this patient shows albuminuria when in a position of lardosis. In the particular case the question has been raised as to whether there is not underlying a slight chronic nephritis or simply orthostatic albuminuria, and that is a question difficult to decide and only time is the decisive point, that is, that the bulk of the orthostatic albuminuria cases gradually disappear unless there is an underlying nephritis. They may show not only albumin, red cells, but occasional casts, and yet apparently the condition is merely orthostatic albuminuria. Now, by orthostatic albuminuria we simply mean albuminuria that appears under certain static conditions, that is when the body is held in certain postures, which disappears with those positions corrected. The ordinary test is to put the patient flat in bed on a relatively hard mattress, or flat upon an examining table after the urine has been passed, and leave him in that position for one or two hours and have him again pass the urine, and the urine passed after being thus flat and prone should be free from albumin, whereas the urine while he is standing up should contain a moderate amount of albumin. To show that lordosis has something to do with it, instead of having the patient flat in bed, pillows can be put under the back so that the spine is formed into the position of lordosis. Under these conditions albumin appears in the urine with the patient flat just as it does with the patient standing. There is another test in which the patient stands in the ordinary position and shows albumin in the urine, and then the patient is asked to stand with one foot upon a chair in order to straighten out the back, and with the back straight in a very considerable percent of these cases the albumin disappears, some evidence that lordosis has something to do with the mechanism of albumin in the urine.

There are several theories why you get albumin in certain positions and do not get them in others. Most of them hinge on circulatory changes in the kidney with the kidney in certain positions of torsion or pressure, and perhaps they are as good theories as any. I am not very fond of theories. When we get to theories I think we might just as well stop. We don't really know why certain patients have this particular type of albuminuria. It is important to recognize orthostatic albuminuria because the prognostic significance of orthostatic albuminuria is very slight. The disease is of no consequence, and we should remember that when we are dealing with young individuals, particularly those who are growing or have grown rapidly, particularly the young lanky type of boy or girl, that is, those from the period of 14 or 15 to 18 or 19 years of age, that albuminuria may be of this type and it can be proven of this type by the tests I have mentioned. And when they are of this type take no particular precautions in regard to diet, exercise, and so on, but regard your patient as normal and do not bedevil him with all sorts of limitations as to what he should or should not do. Those that are dealing very extensively with physical examination of students in our university encounter very large numbers of apparently healthy boys and girls that show albumin and casts, who otherwise are normal, and who go through exercise and even physical training for the teams, remain healthy, and the albumin does not increase and they don't have the catastrophe of having a nephritis. Insurance companies probably would not insure those people because they naturally are ultra-conservative, but the physician can give them a pretty clean bill of health. The main thing is not to bedevil them with too many limitations.

Now, the next two cases I am going to show are interesting and in contrast to each other. They have certain similarities and they have certain differences. One of them, like orthostatic albuminuria and alkaptonuria, is a condition which is more a freak than a disease that caused very marked disturbance, whereas the other patient has a definite disabling progressive disease. This young man is 31 years of age, and he presents two interrelated conditions. One I want to speak about first is his color. Electric lights are pretty poor places to see colors because the yellowish tints do not show very well under artificial light, particularly the type of light we get from the electric light bulb. But perhaps I think you can see that this young man has first a general appearance of pallor, and second, with his pallor he has a distinct yellowish tint of skin, and this is also displayed—you can't see that, you will have to take my word for it—in the eyes. Now, he went through army service. He had typhoid fever before the war in 1915 and he had influenza in service in 1917 or 1918. Following typhoid his physician thought that he was a little more under par than a convalescent typhoid should be, and it is a question as to whether or not at that time a cardiac lesion, which he has, was made out. Anyhow following his influenza in army service a definite cardiac lesion was made out and at the present time he has the physical signs perfectly typical of an aortic insufficiency. The heart is not particularly enlarged to the left, but the apex is distinctly down and somewhat out. My finger is just on the outer edge of the beating heart, and you can see from the position of the nipple it is pulled down to the left. There is no thrill to be made out over the heart, there is a corresponding enlargement, moderate in degree, toward the right, corresponding to the one towards the left. Now, he has had very few symptoms from his cardiac condition. He has had some palpitation, he has had some shortness of breath, but plays golf with enthusiasm. I don't know how good a game he plays, but he plays pretty often, so it is evident his cardiac lesion does not very greatly incapacitate him. Now, this pallor and his lemon yellow color evidently created a great deal of interest in army medical circles. While in the army and subsequently while undergoing vocational training he received the following treatment which illustrates the interest that his condition aroused in army circles, but does not particularly indicate that his diagnosis was correctly made He received salvarsan intraveneously twice. He had a long course of Fowler's solution. He had Blaud's pills; he had x-ray therapy over his long bones and over his spine. That much appears in his history. He may have had more treatment than indicated by that.

What has he besides arotic insufficiency, this pallor and this yellowish tint to his skin? He shows very definitely an enlargement of his spleen as would be expected with the condition. I will just mark out the lower border of his spleen with a little iodin solution that happens to be here. You can see very distinctly where his spleen is. It is good and hard and has a nice round edge and a nice ilttle distinct notch. In other words, this spleen without any question, beyond the inevitable error that occasionally enters into simple physical diagnosis, I think we are perfectly well justified in saying that he shows sploric enlargement, pallor, yellowish discoloration, cardiac enlargement, diastolic murmur of aortic insufficiency, and with that the changes you would anticipate in his pulse, namely the collapsing type of pulse that goes with aortic insufficiency. Now, his blood count is one of a moderate degree of anemia, roughly three and a half million red cells, to be exact 3,568,000 reds, and white cell count nearly seven thousand, slight polychromatic changes, moderate degree of irregularity in the size and shape of the red cells, but no essential chang in the microscopic picture of his blood. Now, his blood shows an additional peculiarity in that his red cells are more fragile than normal. That is, they dissolve more easily in a salt solution than is the case with normal red cells. They are less resistant to the reduction in the amount of sodium chloride in solution, so that if you take a series of test tubes and put in those test tubes salt solution in decreasing strength from .9 per cent on down, you set up two sets of those tubes, but some of your red cells and some of this young man's red cells in those two series you will find that the young man's red cells dissolve more easily; that is, they are more fragile than the normal cells, so that he shows the additional peculiarity of an increased fragility of his red cells.

We are dealing then with a cardiac lesion, aortic insufficiency, presumably an acquired lesion because aortic insufficiency that is congenital is one of the great rarities in medicne. We have to consider what caused the aortic insufficiency. The common causes are in two groups, rheumatic infections and the syphilitic infection. This young man has no evidences by history or by physical examination or by blood tests of syphilis. I believe in his doctor's enthusiasm he has had fifteen Wassermann's. No I have given him four too many. He has only had fifteen, all negative, so that syphilis is pretty satisfactorily ruled out. Now, he has not had any history of rheumatism, nor has he had any history of those associated manifestations in rheumatism, namely tonsillitis or chorea, so that there seems to be no past history of the rheumatic group as causing his aortic insufficiency. That leaves us then to turn to his other two known infections. Typhoid extremely rarely involves the valves of the heart. When it causes cardiac lesion it usually causes a mild cardiac lesion, and mild cardiac lesion until it reaches extreme degrees of dilatation produces no insufficiency of the aortic valves but merely a relative insufficiency of the mitral valve, consequently no diastolic but a simple systolic murmur. So that the probabilities of typhoid having anything to do with this are relatively small.

The other infection, influenza with the possibility of pneumonia. He was very sick. No question but what he had pneumonia, because I have never seen a very ill influenza patient who did not have pulmonary consolidation. In all fatal cases with the exception of the small group that die very late in the disease you always find pneumonia in fatal influenza. Pneumonia does sometimes cause valve lesions. They are apt to be the vegetative type of bacterial growth. They may involve any valves. They rather commonly involve the mitral valve. They usually produce a picture of acute or subacute endocarditis and not the picture this young man has, because he has no evidence at all of fever and chills and the other things that go with an acute vegetative endocarditis. That makes it rather doubtful, but, however, not impossible, that his valve lesion has originated from his influenza.

If it did not come from that where did it come from? There is a very definite distinct group of cases of aortic insufficiency in young people in whom the lesion develops insidiously and is discovered by accident or physical examination rather than because the patient comes from having symptoms to be examined by the physician. I have seen a very considerable number of those cases. You have no idea when the aortic insufficiency developed and very frequently it produces no disability whatsoever and very often it passes unrecognized. I have seen four or five of those cases that were admitted to service in the army and various capacities, underwent marked physical exercise and their aortic insufficiency was not recognized. I have seen those patients that got into the aviation service, served in the aviation service, and served well. I happened to know they had aortic insufficiency before they went in and subsequently examined them and found no demonstrable change in their heart lesion, so that this aortic insufficiency may well belong in that group, with slight palpitation that this patient complains of at the present time more associated with his 3,568,000 red cells, and not associated with his aortic insufficiency. That is merely a possibility.

You may be interested to know what happened to one of those aortic insufficiency cases that went into the aviation service. The boy was a football player, played in the autumn football season, come to the hospital the following spring with a little intestinal upset and had fever above normal. We found a very definite enlargement of his heart and the unequivocal sign of aortic insufficiency, that is fever, no previous history of any rheumatism or any infection or anything of that sort. We thought perhaps we were dealing with vegetative endocarditis which involved his aortic valves. We didn't think this was very probable because his heart was so definitely enlarged and the impulse beat was so forcible. Anyway it seemed worth investigating. We made repeated blood cultures. They were all negative. By the time he got over his intestinal upset, fever, and so on, three or four weeks had elapsed. He was in a technnological institute where the work was hard. It didn't seem advisable to go back to school, so I advised him to go home. He lived in Texas, and I advised him to have a good easy-going summer and not to overstrain too much in exercise and so on, and come back in the autumn, enter school and, incidentally, to come in and let me look him over. He appeared about the middle of October saying he had felt fine all during the summer. I asked him what he had done during the summer. He said he had spent most of the summer in Texas, where it is hot, climbing telephone poles and nailing on cross bars. Apparently that was his idea of taking it easy. The point is that his aortic insufficiency was going on just the same, his heart was moderately enlarged, he did not have any disturbance from it. And I said, "Well, that is fine, everything seems to be all right." He spoke up and said, "What I came in for, I want a letter from you because I want to go into the aviation service." "Well," I said, "I'm afraid my letter wouldn't help you very much." I was rather curious to see what happened. I said, "Go ahead, make your application and get in. I don't believe my letter would help you very much because I would have to say you had a diseased heart." I didn't hear anything more from him for a good while, then greatly to my surprise he came in. The war was over. He said he had been in the aviation service. He had not seen any fighting activity. He had not gotten over on the other side, but he had plenty of flying and he had had a bully good time, a fine experience, and never felt any disturbance from it whatsoever, and his heart was just the same.

Since the question of prognosis so often comes up in these aortic insufficiencies, the prognosis really has nothing to do with the valve defect. It is entirely a question of the heart muscle behind the defect, how long that heart muscle can do its work without some disturbance. And in the case of this young gentleman who is perfectly able to play golf and so on, it is merely a problem as to whether or not in the development of the valve lesion his heart muscle was damaged, and if damaged how much it was damaged in order to predict the future in relation to that damage.

In the other condition, this is undoubtedly a case of so-called chronic hemolytic jaundice, a moderate degree of jaundice, a moderate degree of anemia, enlarged spleen. There are three forms: congenital, acquired and familial. There is no history of jaundice in other members of the family in this case. However, we have to remember that everything must have a beginning and congenital or familial disturbances must begin with the first case, and this may be of the familial type and represent the first of the series. But there are a great many cases of this group which are not familial and not congenital which are simply isolated instances of the condition. Now, what about this boy's treatment? He seems to be disturbed very slightly by the condition. So long as that is the case there is not any particular reason for any form of active treatment. This group of patients have three kinds of disturbances as the result of the condition. They have discomfort and drag with occasional paroxysms of pain in the left upper quadrant because of the enlargement of the spleen.

The second group of disturbances that these patients have consist of pain in the right upper quadrant of the type produced by gallstones, and that type of disturbance occurs because a large per cent of these patients have gallstones. The third kind of disturbance they have are the ordinary symptoms of anemia, weakness, shortness of breath, because at times they get a low blood count. Now, if any of those groups develop and become severe enough to be a disadvantage to the patient then what should be done is a very obvious thing, namely, removal of the spleen and at the same time exploration of the gall bladder and removal of the gall bladder if gallstones are present. It is a perfectly marvelous change that takes place in these patients following removal of the spleen and the gall bladder under those circumstances. Just recently I followed two patients both with gallstones symptoms and marked anemia and so on, in whom the spleen was removed, and before they were completely convalescent from the operation, without complications, their jaundice all disappeared and their blood count had rapidly arisen. These particular patients that I refer to had many nucleated red cells, and poikilocytes. They had almost entirely disappeared within a week or ten days after the operation. So my advice to this young man has been to do nothing for the present. If he gets any worse have a good surgeon remove his spleen and do the necessary operation on his gall bladder. There is no evidence here that his gall bladder contains stones, presumably there are no stones present, but it ought to be explored at the time of the splenectomy. I have told him that in my opinion his heart is perfectly good for such an operation, and the chances are with his aortic insufficiency he is just as good a surgical risk as some fellow sufferer with hemolytic jaundice with a normal heart.

The next case I am going to show very briefly, more for contrast to this one. I said there were certain similarities and there were certain differences in these two cases. The similarity in what this case shows is a change in color. She is distinctly pale, as was the other patient, she dislaps a yellowish color, as did the other patient. nI addition she exhibits a much more evident change in color, namely brownish pigmentation, which the other patient did not reveal. Like the other patient she has a change in her cell count. The red cells are 2,775,000 and the white cell count is essentially the same as the other patient. Both of them have normal differential counts of the white cells. This patient shows normoblasts or nucleated reds, with irregularity in size, staining, and so on, of the red cells, as the other patient. So the similarities are pallor, yellowish color, decrease in red cells, a little bit more marked in this patient than in the other, no change in the white cells, about the same kind of a change in the red cells microscopically except they are more marked in this patient, and this patient in addition shows nucleated cells of normoblast type. I might say in passing that the other patient might have shown the same thing without disturbing the diagnosis. The boy's age 31, the woman's 63.

Notice this patient's history dates back about a year and a half or possibly two years, with periods of weakness, the weakness particularly marked when she gets up in the morning, a little less evident later in the day. She gets up steam slowly but she gets up a fair amount of steam if you give her time. She says her skin has been dark always, that it has darkened somewhat recently, and in addition little brownish spots have appeared on her skin in increasing number. There is no particular pigmentation besides the slight yellowish pigmentation to be made out in her mucous membrane. Now, her history besides that of weakness is striking and very important, namely, she has had periods in which her tongue became tender or reddened or irritated by any sort of acid food. She gives no history of having had ulceration, simply this periodic redness and soreness of her tongue. In addition she has complained of numbness in her hands over a period much longer than she has complained of soreness of her tongue, or of periods of weakness. An elderly person with a history of numbness in the fingers and toes and a history of periodic sore tongue, with or without slight ulcerations, in the very large majority of cases spells primary anemia, and it is primary anemia in those cases whatever the blood picture may be, because the blood picture may be perfectly normal since periods of anemia come in waves. Consequently in the case of primary anemia the history is of much more importance than the blood examination. Periods of weakness, persistent and long continued, tingling and numbness of fingers and later of toes, and periodic occurrence of sore tongue, are the characteristic points in pernicious anemia, and a very large number of these cases are in the sixty plus period of life when you expect a large incidence of carcinoma. A very large number of these cases show gastric symptoms, loss of appetite, discomfort, nausea, vomiting, pain, and they are very frequently diagnosed carcinoma of the stomach, occasionally diagnosed as gallstones, while the real disturbance is a general one involving the blood forming apparatus, the central nervous system, the mucous membrane of the gastric intestinal tract, and there is no carcinoma and there is no gallstones. I have been rather interested in this problem of pernicious anemia because a very large number of the cases come to the hospital and about fifty per cent of them come incorrectly diagnosed. They come incorrectly diagnosed usually because of two things, namely, a physician has taken a poor history, or his assistant has taken a good history and he has not read it, or because the blood is examined and since the blood does not show the typical textbook picture of typical primary anemia he says it must be something else. It is a very common condition. I don't know in a statistical sense, because there are no adequate statistics of the frequency of primary anemia but in my experience, in an average 90 to 100 patients in hospital, we usually have four or five primary anemias, and we often have ten or fifteen in the hospital at one time.

Notwithstanding my own interest in the chronic nephritis, and the large number of cases that come to us with that disease, primary anemia runs it a very close second in the number of cases we see in Boston. Now, gastric analysis in these cases is always of great consequence because in primary anemia there practically is never free hydrochloric acid in the gastric juice. We found that a typical blood picture occurred in a certain per cent of the cases. As I remember it it was about 60 per cent. All of our cases, with one exception, had hydrochloric acid absent which made about 99 per cent of cases in which hydrochloric acid against 60 per cent of typical blood picture. Just the same percentage that had a typical blood picture had a typical tongue history so that, on a statistical basis, gastric analysis and looking at the tongue were really of more use in the diagnosis of these cases than a blood count and a microscopic study of the cells. Simple every-day methods are worth more perhaps than an elaborate careful study of the blood, not to decry the value of the blood count, because you have got to do everything you can.

Let me cite example of the kind of case that is misdiagnosed and then I am through. This year a patient was sent into the hospital diagnosed by a very good man as carcinoma of the stomach. The physician had taken the history and found that the patient had a very typical history pointing to a gastric lesion. He was a man sixty odd years old. These gastric symptoms had developed fairly recently, and the physician thought he could make out a slight mass in the region of the pylorus. The patient looked cachectic and that was sufficient for him to make a diagnosis of carcinoma of the stomach. He did not get a history of the changes in his tongue, which were unusually well given by this patient. He did not find out that the patient for five or six years had numbness and tingling in his fingers, had peculiar sensations when he tried to pick up things so they didn't feel quite right, and that for about a year he had a little queer feeling in the balls of his feet as though he was walking on a carpet, when he was really walking on concrete or stone. I said to myself I will try this out on the students, the third year class, and see what they can make of it in the way of diagnosis, so I took the patient into the clinic, sat him down, and read the class this history of these conditions, and said, look at the man as he sits before you there on the bench and tell the diagnosis. A perfect roar from the class "pernicious anemia," and not a peep about carcinoma. Third year students with a good history had no difficulty whatsoever in making the diagnosis. The physician that had taken the poor history and made a physical examination missed it completely. And that is my moral from this case, particularly in pernicious anemia. Take the history and make the ordinary examinations and put it all together and be not too much influenced by the peculiarities of the blood because they are of less importance since they change periodically, and these other things never change. I never saw hydrochloric acid return in a case of pernicious anemia. I have seen amelioration of symptoms in the central nervous system, but I never seen them completely disappear, although I have seen the blood count go back to a perfectly normal coont, the microscopic picture being unrecognizable as anything but a normal blood count.

TUMORS OF BONE

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I am really trying a very difficult problem to give the result of extensive investigation covering a long period and based upon a very large number of operations, and to give you a definite working rule. I would not give you this if I did not think it was correct. It is better to have no working rule than an incorrect one. But if you can by such an investigation come to a definite conclusion as to a working rule which will accomplish the best results for the patient this is essential and is the reason I do not show many cases because it takes time and interferes with coming to that conclusion. However, I will show one patient who has a different type of bone lesion than the one I am going to describe to you. The one that I am going to describe is a central bone lesion. There are certain data in the history that are of great importance in a bone lesion. First, the age of the patient. If the patient is under 15 and the x-ray shows that the lesion is central, it is not sarcoma. If the x-ray shows that the lesion is periosteal it is just as apt to be sarcoma as a condition not sarcoma. If the x-ray shows more than one bone involved and the lesion is periosteal it is not sarcoma, and not metastatic carcinoma or any hopeless disease. A multiple periosteal lesion in my experience is benign. True, later on one of those lesions might become malignant, as observed in the so-called Paget type. If the lesion is central and multiple it may be either benign or malignant. If the patient is under 15 it is not malignant; if the patient is over 15 it is one or the other.

This patient has a swollen knee and on palpation you feel something that is not bone. Anyone who wishes to make a diagnosis or attempt to make a diagnosis in a bone or joint lesion should always combine the palpation of the lesion with the x-ray picture. What we palpate here is something in the soft part outside of the bone. That would not be present in a central bone lesion except when the central bone lesion has destroyed the bone and infiltrated the soft parts. It is an indicaton of a periosteal lesion, and when you can palpate something in the soft parts and see with the x-ray a periosteal lesion, and one bone is involved, you have a difficult diagnosis.

If in the x-ray you see in the region of the joint more than one bone involved you are not dealing with a malignancy but with some type of arthritis involving bone. Here we have on palpation of the soft parts a condition common in arthritis. Yet in the x-ray there is but one bone involved and that bone is the femur with slight destruction of the outer condyle of the right femur. It is of great importance to compare it with the x-ray of the opposite bone, a thing frequently overlooked. Here then we have a comparison between the outer condyle of the left and the right femur, and we find only a bone lesion or destruction of bone, with little or no bone formation in the outer condyle of the right, associated with an infiltration in the soft parts about the knee joint that might be due to an arthritis.

This man remembers an injury but its presenc or absence is of little importance because thousands are injured who do not develop trouble, thousands are injured who forget the injury. It is of importance, however, if you can get a history of an injury as a possible date for the beginning of the trouble. He remembers an injury in March, 1920. As far as I can make out from the study there is on a lesion here in the region of this joint, in the x-ray only a lesion of one condyle. The Wassermann is negative, all other symptoms are negative. We are dealing with a lesion that we can bring out positively only with the x-ray. And within that bone shell, whether there is expansion or not, there is a light area telling you that some tissue has replaced bone. The x-ray will show only bony structure and bone formation, and you must remember you might have bone destruction anterior and bone formation posterior and, if they overlap, the x-ray will not show positively that bone destruction.

General examination may or may not find the presence of a primary tumor in bony metastases. Examination may or may not discover Bence-Jones's bodies in the urine. Up to the present time I never found Bence-Jones's bodies in the urine in any bone lesions except in multiple myxomas and metastatic carcinoma. Usually Bence-Jones's bodies in the urine do not make a differential diagnosis. Every case I have a record of with Bence-Jones's bodies in the urine I have either the specimen or the autopsy to prove the diagnosis. It has been reported in other conditions and I have recently seen a perfectly benign lesion in which it was said that Bence-Jones's bodies were found in the urine, but the urine sent to us for examination did not show it. We may make a Wassermann, but I know of no syphilitic lesion of bone that will produce the picture of a central bone lesion. We always think of syphilis in a periosteal bone lesion. I know of no case of syphilis either confirmed by the Wassermann reaction by operation where there was an intact bone shell with a central shadow. To repeat, if the patient with a central bone lesion is under 15 we can exclude sarcoma, and the diagnosis then rests between the common bone cyst, the less frequent giant cell tumor, and the rare chondromar myxoma. If the patient is over 15 you cannot exclude sarcoma. The most common central lesions of bone is the benign bone cyst. In the majority of cases they get well without any treatment. The second is the giant cell tumor which predominates in patients over fifteen. Myxoma may occur at any age from birth to death. So you must always bear in mind the myxoma, and no matter what I say to you, and no matter what you expect to forget, remember myxoma, the most difficult of all bone tumors to cure without amputation.

We must bear in mind that, as far as we know, today, the probability of cure by amputation in sarcoma of bone, either periosteal or central, is not more than four per cent. Why did Wyeth 22 years ago report 42 per cent of cures in sarcoma of bone by amputation? Because his pathologists called the giant cell tumor sarcoma, because many of the cases in his group were bone cysts called sarcoma. In the periosteal group, syphilitic periostitis includes the cases of sarcoma that have been cured by amputation, but as we have learned to recognize these lesions of bone that are not sarcoma the reports from various clinics have gradually shown a less number of curse.

To show the difficulty of such a diagnosis in my first extensive report based on a very careful study, I reported four cases of central sarcoma of bone cured by amputation, and today I retract two of them as not sarcoma.

Therefore, the attitude towards a central bone tumor should be different than the attitude towards a lump in the breast. We should practice and tell the public as I have here, that in tumor of the breast if the surgeon is at all in doubt as to its nature the complete operation should be done then and there, because the probability of curing such a tumor is so great and the mutilation is so little, but in central bone tumor, if there is any doubt as to the nature of the lesion, as the probability of a cure is so small, and as in the majority of cases the lesion is not sarcoma, amputation should not be performed except in those cases where the disease has destroyed the limb. The sarcoma that demands amputation at once is similar to a crushed limb in which the hand or foot is gangrenous. It requires no difficulty of diagnosis. It must be removed because it has already removed the limb.

What, then, should be your attitude of attack and why should you operate? Delay will do no harm in chrondroma, in myxoma or in the bone cysts, but the giant cell tumor, which can be permanently cured without loss of function, is more easily cured if there is an intact bone shell. It means curetting only, and not bone transplantation, and the giant cell tumor left alone may destroy the bone shell and infiltrate the soft parts as completely as the most malignant sarcoma and yet never give rise to metastasis. Therefore, in central bone tumor delay may lead to the destruction of function of the limb when an early operation may accomplish a cure with the preservation of the limb. That is why I differ from the attitude towards central bone tumors of those who advocate x-ray and radium treatment first. We have no definite evidence that giant cell tumor with an intact bone shell is affected by the radium treatment; in fact, my first evidence is that it increases its growth. Again we have evidence that a central bone tumor that we call sarcoma may be cured by curetting, similar to giant cell tumor, if we get such a case before the bone shell is destroyed and the sarcoma has infiltrated out. And it looks as if the cure of bone sarcoma does not depend upon local treatment but in its application before metastasis has taken place. If you wish to curette a giant cell tumor so you will not have a recurrence you must use more than a curette. You must use some chemical to destroy tissue, carbolic and alcohol, fifty per cent zinc chloride, or cautery. We burn out a central tumor of bone with intact shell with a cautery. We have evidence it is just as good for sarcoma, while if it is not sarcoma, it is just as good. The point is what happens to the bone shell if you burn it out with a cautery? I have burned out with the cautery every type of bone tumor, except sarcoma. I haven't burned that out because I haven't had an opportunity or I haven't called the tumors sarcoma when they were something else. The bone shell remains intact and suffices just as well when I curetted it for a cyst, or when I curetted it with pure carbolic acid and alcohol, or when I swabbed it out with zinc chloride. So the actual cauterization does not interfere with ossification.

Then we have a working rule. We have a patient who has pain and swelling in a recent fracture in one bone. We take an x-ray which shows a shell with central cavity, with or without fracture. If the patient is over 15 operation is indicated. I don't mean tomorrow, but quickly. I don't know whether we should wait for healing of the fracture, or operate before healing of the fracture. That is to be settled. I doubt if a short delay to allow for the proper reaction after the trauma would be justified. When you operate you are operating to cure sarcoma and to prevent a recurrence of the giant cell tumor, and, most important of all, to prevent the implantation in the wound of myxoma. Every single myxoma in our laboratory for 30 years that has been cut into without a cautery has recurred, and every myxoma during these 30 years that was resected or amputated w,thout the tumor tissue being exposed, is well.

In 1840 in textbooks by any surgeon who knew anything about surgical pathology you will find the statement that myxoma of bone is a benign tumor and it always recurs. Therefore our technique of attack is to destroy the giant cell tissue so it will not recur, to remove all the sarcoma, and to prevent the implantation in the fresh wound of myxoma, and we must have a technique as exact to protect one from transplatation of tissue as we have for the introduction of myxoma. Apparently there is no danger of transplating giant cell tumor, and apparently very little of sarcoma, but in myxoma there is, and even chondroma. Chip a chondroma and drop the chips in the wound and you get chondroma as certainly as if you plant corn or potatoes in the country.

In routine of examination, the most important points are to search for other foci, the examination of the urine for Bence-Jones's product, and in the operative attack to prevent hemorrhage and exposure of the bone shell. The moment the bone shell is exposed the attack changes, the cautery, knife, and the burr are used, and after you have destroyed everything with the cautery you can use carbolic, alcohol and zinc chloride. Care of the cavity depends upon its size. Some can be left open, some can be closed. In some you may transplant bone. If you can differentiate bone cysts at the exploratory incison you can ignore the cautery, the carbolic and the zinc chloride.

Here is an x-ray of a patient sent to me for sarcoma of the upper end of the femur some twelve years ago. Sarcoma was excluded because all of the bones were involved and a diagnosis of traumatic arthritis with bone changes due to hemorrhage was made, and this patient is well today with a movable leg. If the change had been seen in only one bone a diagnosis could not have been made.

Here is a case in which, although I diagnosed it as sarcoma I could not convince my colleagues throughout the country that it was not giant cell tumor. It differs from the usual giant cell tumor in the fact that the bone shell is destroyed over a small area of tumor tissue. This is an exception to the rule. This case is of interest from the standpoint of workman's compensation and accident insurance. In this case the injury of the knee was sustained on July 1st, and was x-rayed on July 2, and not only an x-ray of this bone, but of the other bone, and no changes were observed until August 13th when the changes were seen, and between August 13th and September 1st a small white cloud grew to this. My attitude towards that ten years ago was this I said to my colleague what shall I do if I am in doubt as to its nature. He said, "Do as you think best," and I amputated. If he came to me today and said to me "do what you think best," I would not amputate. I did the best I could with my knowledge ten years ago, but that knowledge was insufficient, based upon cases diagnosed sarcoma that were not sarcoma, and on an insufficient number of cases.

DISCUSSION

Dr. E. I. Bartlett, of San Francisco: I wish to take this opportunity to state a few facts in regard to Dr. Bloodgood and his work. He went into the field that he now occupies to fiill a need, that is, to bring the subject of pathology to the point where the average clinical surgeon could understand it.

The pathologists had failed to do this because they failed to study the clinical picture and take it into consideration when making the diagnosis. They based their diagnosis on deadhouse pathology instead of living tissue. Then they failed to agree in the diagnosis of the difficult cases for the surgeon. In other words, they failed to render assistance to the surgeon at his most critical period, when he was at the operation and when he had to institute treatment then and there which would give the patient a proper chance. The recognition of these various conditions by the clinical history and by the picture at operation seems very formidable. It has been simplified considerably by Dr. Bloodgood. He has taught us first that cancer is curable, that is early cancer; he has taught us, as in this demonstration today, that many lesions that we thought were malignant at one time and the pathologists called malignant, are benign. He has these conditions clinically as positively benign and some of them as positively malignant. The cases that are doubtful clinically he has helped us to recognize at the operation, and when this fails, he has helped us to select the proper type of treatment that will be the best for the patient. Dr. Bloodgood's contributions to the subject of bone tumors are so extensive that they constitute practically all that is known about bone tumors, and it would be difficult indeed to select any point that is most important. It seems to me, however, that he has taught us two things that can be made use of by anyone, general practioner or layman. One is the great importance of early and repeated x-rays following trauma or persistent pain, and the second is conservatism.

Dr. R. B. Dillehunt, of Portland: I have at present two cases that look to me very much like the one that Dr. Bloodgood showed here today. I wish to ask him whether or not I am right in the statement that if a tumor of bone has become of considerable size, if it is a malignant tumor, it is too late to cure by amputation, and if it is not malignant, then amputation is not necessary. I gather that is one of his principles. Therefore, these cases are waiting until we know or feel we can practice some form of conservative surgery. I am very much interested in Dr. Bloodgood's work on the giant cell tumor and I think it is a classical piece of research that will live for many years. I think that Dr. Bloodgood has very much the relationship at the present time to surgery in this country that Dr. Fenger had to surgery in the middle west forty years ago. It was a most enviable relationship. In addition to that he is bringing these things to everybody who is practicing medicine and he is doing away with the guessing on the part of the profession.

Dr. Bloodgood: Let me first answer this

question. Now, it shows one of the dangers of instruction of this kind that is not followed by a written record of what the one who spoke wanted you to hear and understand. The one who asked this question did not hear. He said, "Did you say a bone sarcoma never occurred under 15 or were you referring only to the central bone tumor?" Up to the present time I have not seen an authentic central sarcoma under 15. Periosteal is most common under 15. If you take this boy with his swollen knee, that could be arthritis. With his x-ray that, as far as we know, cannot be arthritis. With a bone defect and with only one condyle infiltrated throughout the knee, as far as I know, there can be but one diagnosis, sarcoma. I know of no treatment here except amputation of it, or x-ray or radium. If that was my leg I would have it amputated tomorrow because I want to work, and I would have an artificial limb and take my chances.

SURGERY AS A THERAPEUTIC AGENT IN THE TREATMENT OF NEUROLOGIC LESIONS

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It is universally accepted that surgery is a therapeutic agent in the treatment of neurologic lesions, but in considering the subject questions as follows present themselves: Is surgical treatment used to its fullest possibility? What are the problems and possibilities of this type of surgery?

Since neurologic surgery requires special technic, is attended with great risk, and results in many failures, it is a field in which only a few men have become interested. For this reason many patients have been allowed to suffer until death, without having been offered relief through surgery. While only a small percentage of patients suffering from neurologic lesions can be relieved by surgical measures, when surgery is indicated and employed, it is a definite factor in restoring health to a patient who has anticipated a life of invalidism or, possibly, an untimely death. Most striking and gratifying results have been obtained by neurologic surgical measures, and it is for the neurologist and the neurologic surgeon to distinguish the operable from the inoperable lesions and to offer relief through surgery whenever possible.

In 1921, 52,217 patients registered at the Mayo Clinic; of this number 5,000 (approximately 10 per cent) had neurologic complaints. A review of this group shows that 25 per cent complained of functional disorders, such as general weakness and debility, numerous aches and pains, and various phobias and hysterias. Seventy-five per cent had organic lesions, such as headache, migraine, sclerosis, syphilis, post-traumatic epilepsy, psychosis and neurosis. Another group of patients had cord tumor, trifacial neuralgia, brain tumor, pituitary disorders, sciatica, peripheral nerve injuries, spina bifida, broken back associated with transverse myelitis, foreign bodies in the brain or cord, and fractures and defects of the skull.

From 1912 to the present time, we have operated on 112 patients with symptoms of cord lesions, which simulated cord tumor. Fourteen of these had extradural spinal cord tumors, twenty intradural but extramedullary, and thirty-one intramedullary. Three had varicose veins of the cord, one had an echinococcus cyst, two had tuberculomas, two had gummas, and two had cerebellospinal tumors. In twenty-seven patients no tumor was found; some of these patients gave definite evidence of meningomyelitis. Eighty-five presented pathologic lesions at the time of operation. Forty-three (51 per cent) had removable tumors. In twenty-six (30 per cent) the tumors were removed partially. Subsequent data show that twenty-two patients are cured and working; seven are improved and able to do some work, and nineteen are now able to care for themselves and to control bladder and rectal sphincters. Thus, a total of forty-eight (56 per cent) of the eighty-five patients in whom tumors were found either competely or partially recovered. When it is recalled that spinal cord tumor was first successfully removed about thirty-five years ago, it is apparent that the present curative results for the paraplegic patient with a spinal cord tumor, are comparatively excellent.

Since 1910, 505 patients suffering from trifacial neuralgia have registered at the Clinic; 275 of these were males, and 230 females. The average duration of symptoms was eight and one-half years. Palliative and radical operations were performed, the palliative operations being alcoholic injection and avulsion of the peripheral branches, and the radical operation, cutting of the posterior sensory root fibers. The radical operation was performed in 208 patients. We advise from one to three alcoholic injections into the peripheral branches as palliative procedures in order to acquaint the patient with the resultant anesthesia which follows successful injection. Trifacial neuralgia does not disappear spontaneously, and the patient gladly accepts the anesthesia, which is a subsequent and permanent result of the radical operation, in lieu of the recurring excruciating attacks of pain incident to the disease. The mortality associated with radical operation is exceedingly low, less than 2 per cent; I believe, therefore, that it should be advised in all cases in which the patient fails to obtain relief from the alcoholic injection, and should be performed preferably when the patient is young and a good surgical risk.

Cases of brain tumor are probably met more commonly than other neurologic lesions that may be treated surgically, but they are not altogether satisfactory from a surgical standpoint. Remarkable results have been accomplished in the removal of benign and encapsulated growths, and fair success has been obtained in the treatment of degenerating gliomas, but little has been accomplished in the treatment of diffuse infiltrating gliomas, or other malignant tumors. Decompression is of some value in slow-growing tumors, but is of little value in rapidly growing tumors; the results depend on our ability to distinguish the operable tumors from the inoperable.

Fairly satisfactory results have followed the treatment of sciatica by the removal of all foci of infection in conjunction with symptomatic treatment by saline and novocain injections into the epidural space of the lumbosacral canal.

Peripheral nerves can be repaired and regeneration may be expected in approximately 50 per cent of cases. In some instances, if regeneration fails, functional results may be obtained by tendon transplantation.

Spina bifida may be one of three types; a simple meningocele, without paralysis, myelomeningocele with slight paralysis, or syringomyelocele with complete paralysis. The spinal defect only can be repaired. Excellent results may be expected in the first type, the simple meningocele, but little can be expected in the second and third types aside from removal of the sac. Paralysis of the lower extremities or of the sphincters is not altered by the removal of the sac.

Exploratory laminectomies for compressed fractures of the lumbar area are satisfactory, even when the operation is performed from six to eighteen months after the injury, provided the nerves have not been cut. Little can be expected when the injury is located in the cervical or dorsal cord. The removal of foreign bodies from the brain or cord is seldom indicated, since the injury is produced at the time of entrance and, unless associated with infection, it is better the condition should not be aggravated by further interference. Skull fractures are fairly common owing to the many automobile accidents. The fractures vary from simple cracks to depressed fractures, some being associated with simple concussions, others with symptoms of compression. It is best to follow the conservative course of expectant treatment, unless the fracture is depressed, or gradually progressive symptoms of compression occur; exploratory craniotomy with removal of the loose fragments and control of the hemorrhages is then indicated.

Skull defects are also commonly met, especially among injured soldiers. The condition is sometimes associated with grand mal epilepsy, Jacksonian epilepsy, and paralysis, but more commonly with headache, throbbing sensations, vertigo, and localized pain. Certain defects have been closed with plates of bone, metal, or celluloid, with very little apparent benefit. Others have had flaps of fascia inserted to replace the dura, with equally unsatisfactory results, and unless the defect is conspicuous, over the forehead or on the side of the head, it should be left undisturbed and treated symptomatically.

The future of neurologic surgery. A high percentage of neurologic lesions are functional, not organic. However, patients with such functional disturbances need attention and medical advice, and unless physicians assume the responsibility and are willing to render their services, this group of patients will seek relief from the various cults of medicine.

The cause of the altered physiologic and pathologic conditions is an associated problem in organic lesions. The various types of headache and neuralgia seem conclusive evidence of a definite organic disturbance, and physicians must ascertain their cause and provide relief. It is true that trifacial neuralgia can be relieved instantly and permanently by cutting the posterior sensory root fibers, but this is a major procedure and only a symptomatic form of treatment. Is it possible to ascertain the specificity of this disease, and make a vaccine for relief, thus obviating operative measures? The same question may be asked concerning the cause of indefinite neuralgias of the face and of intercostal neuralgias in sciatica. A review of cord lesions, with an analysis of the symptoms, reveals the presence of cord tumors in many patients with a diagnosis of spastic paraplegia. Spastic paraplegia should be recognized as a symptom of an organic cord lesion.

The condition of patients with broken backs and paralysis is generally regarded as hopeless. In the Mayo Clinic we have operated on patients with injuries in the cervical, dorsal, lumbar, and sacral regions, in some instances immediately and in other instances months after the injury, with about equal results. It has been our experience that injuries of the cervical region respond a trifle better to surgical treatment than those of the dorsal region, also that those of the lumbar region respond more readily than those of either the cervical or dorsal regions. The injuries to the dorsal region are the slowest to respond. We are also called on to treat patients with complete paraplegia and only slight trauma to the back without fracture. What causes transverse myelitis, and what can be done for it? Operative treatment is of distinct value in cases of compressed fractures of the cauda equina, provided the nerve roots have not been cut; very little can be hoped for in fractures of the dorsal and cervical regions.

The treatment of spina bifida presents numerous problems. While the simple meningocele can be removed and the patient relieved completely from his symptoms, myelomeningoceles and syringomyeloceles are associated with partial and, at times, complete paralysis of the limbs and, in some instances, with hydrocephalus. Is it possible to relieve hydrocephalus by establishing the normal flow of cerebrospinal fluid, or can the mother be treated during pregnancy to prevent this anomaly? The treatment of peripheral nerve injuries has aroused a great deal of interest, especially in view of the vast experience along this line during the World War. Regeneration will take place, if the nerve is properly sutured, in approximately 50 per cent of cases; the employment of all modern technics has been helpless, however, to bring about satisfactory results in the remainder. What can be done to restore the paralyzed muscles, and what condition exists in the nerve above or below the injury to prevent its regeneration, are the questions that present themselves for solution. If regeneration of the nerve cannot be induced, has the orthopedic surgeon done everything possible in the way of tendon transplantation to restore normal function?

Many disorders of the pituitary gland are encountered but, up to the present time relief by surgical interference has been offered only to patients presenting symptoms of optic disturbance, such as hemianopsia. Very little has been done for the patient with acromegaly, whose condition is slowly progressive, or for the patient suffering from dispituitarism, whose condition compels him to remain a semi-invalid. The medical profession must offer a solution for the treatment of this large group of disorders, either in the form of glandular, or surgical therapy.

Among other problems is the treatment of skull injuries. What can be done to prevent posttramuatic headaches and neuroses? What can be done to prevent posttraumatic epilepsy? Is there a definite cure for idiopathic epilepsy?

Brain tumors have been given considerable attention, and surgery has proved a valuable adjunct in the treatment of encapsulated benign tumors and cystic degenerating tumors; however, it is helpless so far as satisfactory treatment of diffuse infiltrating gliomas and malignant tumors is concerned. There is still a lack of efficiency in the diagnosis and localization of brain tumors which must be remedied, and some method must be devised for the treatment of infiltrating and malignant lesions.

One of the greatest problems confronting the neurologic surgeon is the perfection of diagnostic methods which will enable him to distinguish operable and inoperable tumors, and thus eliminate useless attempts to remove inoperable growths. Ventriculography, which is a delicate procedure, not unattended with surgical risk, is of value occasionally in determining the location of an otherwise unlocalized tumor. To be of real value, it must be instrumental in localizing an operable growth when all other means of diagnosis have failed. It should be borne in mind that ventriculography, like other laboratory procedures, is an adjunct in the diagnosis, but cannot supersede the careful, clinical, neurologic examination.

Radium is a therapeutic agent in the destruction of neoplastic tissue and is being used rather extensively in the treatment of inoperable brain tumors. Just how much will be accomplished cannot be determined with any degree of certainty, since sufficient time has not elapsed to permit of an accurate opinion. It is our belief that it will serve as a valuable factor in the treatment of inoperable lesions, but will not be a panacea for all infiltrating brain tumors. The roentgen ray, likewise, is being employed, but with less effective results.

SUMMARY

Neurologic surgery is of great value in the removal of benign growths; it restores normal vision to patients suffering from pituitary disorders; it affords symptomatic relief to those suffering from trifacial neuralgia; and it is a valuable adjunct in the plastic construction of peripheral nerves.

It is conclusive that the neurologist and the neurologic surgeon must study the etiology, physiology, and pathology of the nervous system, perfect the diagnosis, and institute operative procedures whenever justified by the presence of an operable lesion.

DISCUSSION

Dr. Laurence Selling, of Portland: It is imperative that we as physicians educate the public in regard to the early symptoms associated with the development of malignant tumors so that the public will come to us when these tumors are in the operable stage. The problem with regard to brain tumors is somewhat different. These tumors in a general way produce symptoms very early. The patient has periodic headache, nausea and vomiting, he develops all of the symptoms at an early period of his illness. It is therefore incumbent upon us to educate ourselves rather than to educate the public for the early recognition of these tumors. Many of these cases in the early stages go under the diagnosis of gastric disorders, unexplained headache, eye strain, without any effort being made to recognize the exact nature of the trouble. Unfortunately the diagnosis of brain lesions has not kept pace with the advance of neurological surgery. As a matter of fact our knowledge of localization is not going ahead very rapidly. It remains a tremendous difficulty, especially in dealing with tumors of the silent areas, to recognize these tumors at a period when they are operable.

With regard to spinal cord tumors, the same conditions apply except that as a general rule sprinal cord tumors are more readily recognizable. Certainly the results are better than in brain tumors, because as a general rule they grow so slowly. We have had some improvement in our diagnostic technique and it is to be hoped we will soon be in a position to operate better than we are at present.

GENERAL MEDICAL MEN CAN AND MUST MAKE A DIAGNOSIS OF TUBERCULOSIS IF SATISFACTORY RESULTS IN TREATMENT ARE TO BE OBTAINED

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There is a prevalent belief that the general practitioner cannot diagnose tuberculosis. Some would go so far as to claim that early diagnosis is a matter almost wholly for specialists. Such an attitude can never solve the tuberculosis problem. It is a part of the universal pessimism which has surrounded this disease for ages, and which modern facts have as yet failed to dispel.

If the tuberculosis patient is to receive the proper treatment at the hands of the medical profession, the general practitioner—the man who first sees these cases—must be able to make the diagnosis.

One reason why progress in treatment has not been made faster is because there is a general belief on the part of physicians, as well as laymen, that tuberculosis is an incurable disease, and that it is a waste of time to study it. This pessimism can best be dispelled by a recognition of the results obtained by treating tuberculosis early—at the time when it responds most readily. Early tuberculosis is nearly always curable, but unfortunately it is rarely treated at this time. I use the term "cure" in the sense of a restoration to physical fitness.

Specialists—either in or out of institutions—who should be devoting their attention and skill to early cases, are largely employed in the treatment of far advanced ones. There is so small a percentage of the total number placed under treatment who are brought back to a satisfactory position in the economic and social life that the results tend to discourage instead of encourage. While many of these far advanced cases are restored to usefulness, yet the number is relatively few, and the number is in a general way taken to represent the degree of curability of the disease.

The statistics of the curability of tuberculosis are made up largely from sanatoria, and are subject to much error. They are rarely based on a sufficient treatment, and are very often a result of a very poorly conceived and executed regime. All patients are counted in the statistics who remain in the institution a minimum of three months, the absurdity of which is evident. Many patients leave in six months improved who might have secured an arrestment in nine months or a year; but all are counted. This would not be so bad if it did not react against the tuberculous patient. When an institution reports forty-five per cent of early cases arrested, it means that forty-five per cent of the cases were arrested in the time that they stayed in the institution. It has no bearing whatever on the number of these cases that could have been cured under an adequate treatment. But unfortunately this is not generally understood.

The discussion of early diagnosis, as carried out by specialists, is usually a technical one. They are usually discussing the difficult problems—the problems of the border-line cases—and in so doing, they are discussing the most difficult of all chest cases to diagnose and incidentally some of the most difficult diagnostic problems in medicine. The general practitioner is apt to believe that these problems are universal in the diagnosing of the disease. But such is not the case. Early tuberculosis can be diagnosed today by experts long before bacilli appear in the sputum and when the changes in the lung are so slight that they produce very little disturbance in the physiologic equilibrium. Most patients who consult physicians for a diagnosis, however, are in a more advanced stage, but still in a stage which offers excellent chances of arrestment if they were only recognized and given adequate treatment immediately. Such cases can be diagnosed quite readily if only their symptoms are carefully studied. In this large group of cases, the general practitioner should be as able to make a diagnosis as he is in other diseases. He may not be able to diagnose all of the doubtful cases, but it is certain that he will diagnose very few of even the frank cases unless he has confidence in his ability to do so. If he once has confidence he will study the disease and prepare himself for detecting it. Few men have an inclination to try something that they feel in advance they cannot do. So confidence is essential to success.

Medical men in all lines of practice can and must be able to make a diagnosis of at least three-fourths of the frank cases of clinical tuberculosis, if this disease is to be conquered clinically. The diagnoses of doubtful cases will always be difficult and require expert services; but with confidence and reasonable care, and painstaking method, those who are not specialists should make presumptive diagnoses in at least three-fourths of the cases of active tuberculosis that seek medical advice, and the number who actually require an examination by specialists should be a gradually decreasing one.

The necessity for the early recognition of tuberculosis is emphasized strongly by the statistics of treatment. The statistics of results in the treatment of tuberculosis, like those of all other diseases, will vary as the material varies, and as the methods of handling the patients vary. The degree to which the disease will yield to treatment, however, is shown by the statistics of those who are able to secure the best results. There are many causes of failure in the treatment of tuberculosis, which should be recognized, such as late diagnosis, late treatment, inadequate treatment, and treatment for too short a time. It is such a long drawn-out disease, and has so many disappointments and discouragements in its course, that the weak fall by the wayside long before there is an opportunity for a good result to be produced. The more advanced the case the longer is the time required for treatment. The physician who guides the patient must be able to guide him through all these difficulties and keep him interested until the disease heals. The difficulties are the same in the home as in an institution; only in the home the problems are greater and more difficult to solve.

If early cases of tuberculosis are treated under ideal conditions, and treated sufficiently long, between eighty and ninety per cent at least should be able to secure an arrestment. A very large percentage of moderately advanced cases can also be restored to usefulness. The percentage of good results in this class of cases drops by at least twenty per cent below that of the early ones. In the far advanced cases the problem is even a more difficult one. The percentage of those who are able to secure an arrestment in comparatively small. Rarely more than thirty per cent under the most favorable circumstances are able to have the progress of the disease checked so that they can go ahead and take their places in the social and economic world. Under existing conditions, with the inadequate treatment furnished, statistics fall much below the figures here suggested as possible.

If medicine is to do its duty towards the tuberculous patient, diagnosis must be made and treatment must be instituted early—at the time the patient can be restored to health and still retain his working efficiency. The difference between twenty-five or thirty per cent of good results in advanced cases, and eighty to ninety per cent of satisfactory results in early cases, should ever be present in the minds of medical men and should spur them on to making early diagnoses, and securing for tuberculous patients early adequate treatment.

Offsetting the often repeated statement that the general practitioner cannot diagnose tuberculosis in its early stage, I would like to call attention to the fact that laymen who have tuberculosis are continually recognizing it in their friends and are often the cause of their coming to specialists for examination. In quite a percentage of the early cases that come to my institution the diagnosis is made by discharged patients, and sometimes in spite of the opinion of one, two or more doctors to the effect that no tuberculosis is present. Recently, a discharged patient made a diagnosis of early tuberculosis in one of her friends. The friend consulted two physicians who said there was no tuberculosis present, and then a third one told her that there was a possibility of it, but that it did not seem to him to be a very pressing case. She, remembering her own symptoms and her own experience, put the patient to bed and ordered rest, much as she herself had taken in the sanatorium, until her friend could make arrangements to enter the sanatorium. We found an early clinical tuberculosis with slight infiltration in both apices, and one on occasion found bacilli in her sputum.

I have confidence that any man, who has studied medicine for four years and has had the experience of hospital and private practice, can make early diagnoses of tuberculosis better than the layman; but he cannot do it unless he has an interest in the disease and the confidence in his ability to recognize it. The reason ex-patients make diagnoses is because they are interested in the disease; in its early diagnosis, and in its treatment. They know from experience what an intelligent attitude toward it means. The reason physicians fail so often is because of a lack of interest and a lack of appreciation of the relative value of an early diagnosis, with intelligent treatment, as compared to a late diagnosis with or without treatment. The common opinion that the general medical profession cannot diagnose tuberculosis does the profession an injustice, and the cause of tuberculosis harm.

We must change the pessimistic psychology of both laymen and physician, if we wish to make satisfactory headway in combating this disease. Both must recognize the curability of the disease. Both must understand the value of early diagnosis and the seriousness of late diagnosis. The physician must be able to make a diagnosis when the patient comes to him, and the layman must be willing and anxious to have a diagnosis made at the earliest moment possible, and he must be willing to accept the diagnosis and undergo the established treatment as soon as the disease is detected. Then the statistics of tuberculosis will improve and the disease will be taken from the most deadly and placed among the most curable.

What is an early diagnosis? Early diagnosis of clinical tuberculosis is one when the disease first shows signs of disturbing the physiologic processes of the body. Such a diagnosis, however, will be made in comparatively few cases, because such cases do not present themselves for examination. The number, however, should be increasingly larger as the optimistic truths which belong to the modern method of treating this disease become generally known. If, however, the disease would be recognized as soon as the patient presents himself for treatment, the number of favorable rsults could be doubled.

To recapitulate, if rapid headway is to be made in the fight against tuberculosis, I would say that both physician and patient must first believe in the fact of its curability; second, both must appreciate the necessity of its early recognition; third, the physician must have an interest in the disease and a faith in his ability to detect it, and the layman must have an earnest desire for early diagnosis and immediate and intelligent treatment. With this psychology he can approach early tuberculosis with a feeling that it can be suspected by comparatively simple measures in at least eighty per cent of cases.

Clinical History. The most important of all measures in the recognition of early tuberculosis is a carefully taken clinical history. The clinical history, when carefully obtained, will give a clue to the diagnosis in a very large percentage of cases. For a better understanding of the symptoms, I have suggested the following etiological classification.

One can see at a glance from this grouping that there are only three elements present in the production of most of the symptoms of tuberculosis: first, the toxins, which act upon the general nervous system and the endocrine system, producing general—or what are often termed "constitutional" symptoms; second, there is the inflammation in the lung, which, acting upon the endings of the sympathetic and vagus nerves, produces reflex disturbances in other organs and tissue; and, third, there is the local disease in the lung, which now and then produces by its presence the third group of symptoms.

These symptoms have a varying value in different cases. One must not expect to find the entire group of toxic symptoms nor the entire group of reflex symptoms, nor all of those due to the tuberculosis process *per se,* in every case, but there will usually be some symptoms of at least two of the groups present. By combining the various symptoms belonging to these individual groups that are present, one readily sees that the disease present is in all probability in the lung. Symptoms such as make up the toxic group may be due to any toxemia. Many of them, particularly those of nerve instability, may be due to overwork, to neurasthenia, to endocrine or psychic imbalance. So, by themselves, they cannot be taken as indicating tuberculosis. But if they should be combined with pleurisy, spitting of blood, expectoration, or frequent colds, then we would at once think of the lung as being affected and as tuberculosis being the probable cause. If they should be combined with some of the reflex symptoms particularly, those which are shown in the larynx, in hoarseness or cough; pains in the shoulders and muscles of the shoulder girdle; or a flushing of the face, we would at once have our attention focused upon the lung. By combining the various symptoms of these three groups one can usually determine whether or not tuberculosis is probably present or absent. The symptoms which are of greatest importance in pointing to tuberculosis, are, *spitting of blood*—which should always be taken as being of tuberculous origin, unless some other definite cause can be proved; *pleurisy*—either dry or with effusion—which is nearly always tuberculous in nature; a *cough, with expectoration,* which continues more than two or three weeks, and particularly if it is accompanied by some of the toxic symptoms; *sputum,* if it contains tubercle bacilli; *flushing of the face,* which nearly always means tuberculosis if it is accompanied by the symptoms belonging to the toxic group or the reflex symptoms in the larnyx, or by the spitting of blood, pleurisy or frequent and protracted colds. The toxic symptoms when added to these mean that the process is active.

It is the eliciting and analysis of the symptoms that mean the most to the man who is not continuously examining chests. The general practitioner must not depend too much upon his physical examination, because as a rule he does not have sufficient experience to be sure of his findings on percussion and auscultation. Inasmuch as specialists have insisted so much upon the value of percussion and auscultation, the general man being unable to find alterations by those methods, feels that he is not justified in making a diagnosis and is very much inclined to reject a probable diagnosis made on clinical history, because of his failure to find physical evidence.

X-Ray. The x-ray may be useful or misleading. An x-ray should always be made when possible; but a diagnosis should rarely be made upon the x-ray alone, unless it is made by a very competent man who is accustomed to making and reading chest plates. They should always be read in conjunction with the clinical history and data obtained through other methods of examination.

Tuberculin Test. Tuberculin tests are also of value and should be utilized, but every patient who reacts to tuberculin should not be pronounced as clinically tuberculous. Unless one utilizes this measure with discretion, he will be more confused than helped by its employment. A negative reaction is important, and a markedly positive should carry positive weight.

Examination of Sputum. Sputum should always be examined carefully. In the first place, it is not necessary that tubercle bacilli be present in the sputum in order that a diagnosis of tuberculosis be made. Tuberculosis is often present for a long time before tubercles rupture and bacilli appear in the sputum. Many errors will be made if one assumes that they must be present, or takes for granted that examinations of sputum, as carried out, represent exact methods. The examination is subject to much error. In the first place, all tubercle bacilli in sputum cannot be found by any method that has ever been devised. In order to find tubercle bacilli by the ordinary method, Dr. J. E. Pottenger has computed that there must be about two thousand bacilli per cubic millimeter of substance examined. By a method of concentration which he has established, tubercle bacilli may be found in numbers of about two hundred to the cubic millimeter. But even then, there is considerable room for failure. Patients with early tuberculosis may expectorate ten times a day, and yet have bacilli in the sputum only once. Or, they may expectorate bacilli only once in two or three days. One can readily see how much error lies in examining a single specimen.

DISCUSSION

Dr. R. W. Matson, of Portland: In discussing this paper I believe that Dr. Pottenger is far more optimistic than I am regarding the ability of the average practitioner to diagnose tuberculosis in the early stages. Not only tuberculosis specialists but the practitioners make an enormous number of errors. Fully ten per cent of the patients admitted to German sanatoria are proven subsequently not to have tuberculosis infection. Our own work at Camp Lewis showed definitely that the average practitioner and best internists are overlooking manifest tuberculosis, in many instances the sputum containing tubercle bacilli.

Out of the first 30,000 men examined at Camp Lewis, with a board composed of the best internists of the Northwest, 170 men were found with tubercle bacilli in their sputum. Some of these men had been in the army as long as 17 years. They had passed repeated physical examinations, had passed through the mobilizing examinations, the draft board and medical advisory board examination and came to Camp Lewis and were designated to military organizations, and it was only through a survey of the entire organization that they were picked up.

The trouble is the medical profession does not know the difference between tuberculosis as an infection, and tuberculosis as a disease. We know that practically all of us are infected; that the infection is shown by a symptom-complex which at times is so very mild as to be imperceptible but when that individual's power of resistance is reduced it is like a little flame which spurts up, produces a few symptoms and dies away again. Perhaps later in life, when some physical or mental strain takes place, comes the big break in immunity and manifest disease occurs. But of course the disease has already existed a long time.

The danger of roentgenologists is that they make a diagnosis of tuberculosis when it does not exist in a clinical form, or in the form of tuberculous disease. That we demonstrated absolutely in government hospital 21 at Denver when 1400 men were sent theer because of tuberculosis infection on the basis of x-ray examination and not in a single instance after long continued observation was clinical tuberculosis found then or since their discharge.

Twenty-five per cent of the 292,000 men that were rejected at Camp Lewis on account of tuberculosis had tubercle bacilli in their sputum, and those men had escaped every examination all the way over the entire western states which sent them to that camp. So it only goes to show that the diagnosis is not so simple. I say that the diagnosis of early tuberculosis present a lot of problems.

Syphilis is also very frequently mistaken for it. Under syphilitic treatment patients are often cured of their tuberculosis. I could mention many instances. I say it is not so simple to diagnose tuberculosis unless you are specially trained, and it requires a long time. Men who are doing nothing but physical examinations from morning to night are many times puzzled. What constitutes the normal type of breathing to one physician is abnormal to another. If you consult text books on medicine you will see what the different authors tell you to look for in your diagnosis of early tuberculosis, and you will see that among all the eminent authorities, no two agree on what is the first sign of tuberculosis from a physical diagnostic standpoint.

Dr. Pottenger: The point that Dr. Matson brought out is just exactly what I want to bring out in this discussion. We as specialists see the difficult cases. We all admit there is probably ten per cent in which it is extremely difficult to diagnose. There is probably a time in each one of these cases that it might be a little difficult to make a diagnosis. I am honest in beileving that if we can remove this pessimism and get the physician interested, and let him know that he has the ability to do it, as he has in the practice of other diseases that he has in the past, we are going to make the greatest headway.

PRESENT DAY PROBLEMS OF MEDICAL PRACTICE

Frank Billings, M. D.

CHICAGO, ILL.

The subject allotted to me is the problems of modern medicine, and in discussing that subject of course I must do it from the point of view of organized medicine as represented in the American Medical Association. The problems which confront the medical profession today are a good many, and it will be impossible in any one hour to discuss them, but a few of them are important, and they face us daily.

The evolution in medicine, the great improvement which has taken place in the knowledge of medicine, within the last fifty years, is such as to complicate the problems. While of great benefit to the members of the profession and greater benefit to all of the public of which we are part, still they are matters that are problematic and must be discussed. Today the main benefit which medicine accords the public, in the opinion of the public, is the fact that it has prevented disease. We are a part of the public and we also see that. While it has lessened many of the infectious diseases it has not others, and although we have just as accurate knowledge about their causes, we are absolutely helpless in preventing them, and almost as helpless in their treatment. That is most as helpless in their treatment. Because of many of the problems of various kinds that we have to consider in organized medicine, and because of uncertainty and our inability to prevent some diseases, because of the inability on the part of the State to enforce laws for the prevention of certain diseases in a successful way, we have more or less of the problems growing out of it. That has given rise to measures of relief for diseases that we cannot wholly prevent in the form of what we have been pleased to call paternalism, on the part of the federal government, and upon the part of the state and some municipal governments, and this paternalism takes the name in the minds of many people of state medicine.

Then growing out of that, and as a part of it the growth of a movement in the old world, more particularly beginning in Germany, of the protection of the people from communicable and infectious diseases, part preventable and part not, of a means of support during illness and injury, or, in other words, of an insurance as it has been proposed in this country of a compulsory type. And it has been the cause for the last ten years or more of discussion as to its applicability, of the advisability of its application, of its possible benefits, or, in the minds of most of the members of the profession, of its pernicious effect both upon the people and upon the profession. Those are the two questions that have arisen in the minds of the profession that probably have caused more bitterness, more confusion, in a sense needless on the part of both, and those two must be discussed in part. Then in addition to these movements, and because of the increase of knowledge of modern medicine, which now embraces a knowledge that no one human mind can acquire, it has meant in the last twenty years a bigger and necessary development of specialism in medicine.

The result has been that specialism has been overdone. The result has been that because of the growth of surgery, and the consequent growth of specialists, particularly in surgery, a larger number of the profession have taken up that sort of practice than are needed, and this has led to an attempt to solve the problem by the formation of groups in practice in recent times. And this type of practice has taken various forms. First, the group of individuals in hospitals, loosely organized, in which there are representatives of general medicine, surgery and all of the specialties, to whom a patient could go for a thorough examination which modern medicine affords, in the application of all of the knowledge that we have. This has existed for many years, gradually increasing in efficiency in the hospitals connected with medical schools, but this last arrangement has had with it no provision for one fee for the patient to pay. Each individual of a group has acted as an individual, with the patient receiving advice given by one or by a part of the group, but the fees have been collected by each individual in the group.

Of the national organizations that have grown up and we can concede they have been of enormous benefit in the field of welfare, is the National Tuberculosis Association, of which I and doubtless many of you are members. Since its organization it has worked in the field with a well thought out program and brought into the work the ability to secure large amounts of money to put over a program. Their work has been productive of splendid results, as you know. Tuberculosis is greatly lessened and the mortality therefrom equally lessened. The very fact of the usurpation of the field of treatment of disease of even a particular kind has given rise to more or less controversy with feelings of animosity upon the part of members of the medical profession, and is one of the things that is to be considered.

To get to the American Medical Association and how to meet some of these problems. Perhaps before I get to that I ought to speak of the greater problem which confronts all of us—It is our business, but it is only our business because we are just citizens of this Republic—and that is the growth of cults and their practice. I tis not your business, gentlemen of the medical profession, to stop them; it is not mine. It is the public they affect. But we are citizens, and as citizens of this country, our knowledge and our qualifications enable us to lead the remainder of the people and to educate them in the need of a proper supervision of their health and their lives. That is our only relationship to them.

The American Medical Association was organized in 1847, seventy-five years ago, for one sole purpose, the elevation of the standards of medical education. It was small at its beginning. The country was sparsely settled. It met annually, except that it met only twice during the civil war, so that while this is the seventy-fifth anniversary it was the seventy-third meeting at St. Louis. They did not accomplish very much although they had a committee of medical education, and every year they had their committee reports with recommendations, excepting in a few localities where there was a large population. There was animosity about it even in that day. There were differences of opinion.

The work of education of the American Medical Association in its first organization was continued after the reorganization as a committee on education and in 1905 this was changed to the Council of Medical Education.

We had one committee upon the Advance of Research, of which Dr. Cannon was the chairman for many years and continues as chairman of that important work today. We had a committee on legislation; we had a committee on publication and education. We had two or three other committees, but these four were the ones that were the most important. Their work was along somewhat parallel lines so in 1910 they were included under one council, the Council on Health and Public Instruction with the duties of all of those pre-existing committees.

In 1905 the House of Delegates gave authority to the trustees to organize the Council on Pharmacy and Chemistry, the purpose being to come back at the proprietary medicine corporation with its quackery and its nostrums, and that has been in existence under the jurisdiction of the Board of Trustees since that period of time. We have our Judicial Council, which is our Supreme Court. It attempts to settle differences.

The medical profession or the Association was fortunate in 1898 in securing a man to serve as editor of its journal, George H. Simmons. I need not say because you know what he has done for the journal. It has the largest circulation of any medical journal in the world. Eighty-nine thousand copies were sent out last week; a journal that meets probably the needs of the practitioners all over the country to their satisfaction to a larger degree than any other journal. Fault is found with it by a few, but as a whole receiving the support and approval of the profession. Dr. Simmons has also acted as manager of the association.

Remember the financial source of the American Medical Association is from its Journal, from the subscriptions and the advertiseemnts. This has been so considerable that the association has been able to do the work it does, but it has not developed in some directions as fast as it should be to meet modern medicine, to meet the problems that I have named to you. It has not met them in part because perhaps all of us, have not been awake, too few of us perhaps awake to the need. It has not met them because like other organizations it had its annual meeting and its House of Delegates was really the American Medical Association, meeting three days annually, and then separating not to meet again until next year, confirming the work of its councils but leaving undone anything except resolutions.

That has been one of the weaknesses of the medical profession in local, in state and in national organizations. We have not continued the work we laid out to do. But we have had an awakening. The war awakened us beyond anything. Economic conditions arising from it have awakened us to the need of greater effort by organized medicine to do something. So at the New Orleans meeting the House of Delegates changed the bylaws so that from that time on the Board of Trustees has greater responsibility. It has the full responsibility of a Board of Trustees or Board of Directors of any organization under the laws of the state in which it is organized. To meet problems we have undertaken certain things which I feel you should know. First, one of the greatest difficulties that the medical profession has is the protection of the public in the action of legislation in the various states of the Union which is inimical to the public welfare.

By the action of the last House of Delegates, upon the recommendation of the Council, approved by the Board of Trustees, we are establishing at headquarters in Chicago a bureau of legal medicine and legislation, and we have moved so fast that we have secured a full time director of that bureau who is already at work and we will have a personnel which must be secured by his visits to your state and other states, and he will meet your legislative committee and help in opposition to inimical legislation, legislation inimical to the health and benefit of the people, in medical defenses, and all such things that may come up. It is the first time the association has had this opportunity to move in a way that is going to amount to something to every member.

If we could secure enough qualified people, men and women, to go out and properly supervise statements made to the public, that would be a good way, but it would be expensive. It is done more or less. Such a meeting as you have here for instance. You have requested members of the profession from abroad to speak before your public, that is an education of this public, but it reaches but few, comparatively few. Your own preachment from the rostrum would do something for your own community, but it is difficult to put such a program over throughout the whole country. We have to reach them in another way.

It seemed to the Board of Trustees, co-operating with the Council of Health and Public Instruction, that the American Medical Association should publish a pamphlet or magazine form a lay medical journal or what we might call a lay medical journal, and that has been determined upon. Already we have made arrangements for the publication of such a journal, and when the new building at Chicago shall have been completed, giving available press room, that will be done, and it is probable the first issue of that magazine will be made on or about April first of next year, and up to and until that time they will be busy in preparing material for two or three numbers of that magazine that may come out. The purpose of that magazine will be to sell to the public the knowledge which the medical profession has and which they should know. Articles will be couched in language that they will understand, and to do that there must be writers that will ge able to put that in simple story form. It will contain matters of interest on public health, on disease, and so on, that may be taught to the public as pre-natal care, infant welfare, child welfare, and all other matters of sanitation that may appear, and such articles that will be of value even to the members of the medical profession themselves.

One of the most difficult things we have had to meet has been to find somebody that could act as the editor and the executive secretary of the Council on Health and Public Instruction. We finally, fortunately, have been able temporarily to meet the problem. Dr. Victor C. Vaughn, who has been the Chief of the Medical Division of the Federal Research

Council in Washington, will serve his full term there, completed on the 30th of December, and he has agreed to come to Chicago on October 1st to complete the organization for the publication of our new venture and to remain just for a period of a few months until we can organize and get out an issue of the journal,, and perhaps in the meantime to find a permanent editor. That means education of the public; it means getting at facts.

Compulsory health insurance is as inapplicable to America as it would be to Africa. If any of you have had a fear it is going to be applied you can lay it aside. It is unAmerican. What may have done for Germany will not do for America. It is not working well in England from all counts. From the latest information we can get they are obliged to substitute the old method of care of their indigent people and of their poor. It is costing them more, it is less popular. There are fewer physicians in England today than there were five years ago. So we need not fear that. State medicine; supervision of the sick, care of the sick by the state. I think that is unworthy of consideration. It couldn't be done. The state and public health matters are taken care of, we hope, in most states by qualified public health sanitarians. They are not practitioners of medicine, and they could not get a personnel to do the practice of medicine that would be qualified to do it. It would be bureaucratic. Bureaucratic methods always are expensive, always are badly done. We have too many examples of it in our state administrations and in our federal government with inefficient expensive methods.

I don't know how we are going to meet the cults, unless we organize as a body of citizens fit and qualified to lead the remainder of the public, because we are qualified to teach them. The present status of the knowledge of disease is such that safety of health and life will depend upon the qualifications of those who care for the sick. We can unite in propaganda for this education of the people provided we steer clear of politics. The moment we begin to bring pressure upon members of the legislature in the sense of ward politics we are lost.

Here in Washington, California, Oregon and Idaho, you have formed a method of liaison between yourself and the people in your organizations. You call it the League for Conservation of Public Health. That is one means of organization of the profession and of the lay population to work co-operatively for their own benefit. That is the whole thing, to arouse such sentiment that legislatures will not dare listen to or accept bribes for the enactment of legislation that is harmful to the public. Whether your method is the right one is still I think a question. It seems to be working. Whether it will apply to all communities we don't know, but some method must be tried.

It has been a pleasure to be with you and attend this meeting of the Pacific Northwest Medical Association. You have got here a splendid body of men and women; you have had a splendid program; it has been interesting from the beginning to the present time, and I expect that tomorrow it will probably be of greater interest than that of yesterday and today. Why was it necessary, when we ask ourselves this question, that you in these four or five states organized a separate association. To my mind it has been necessary because of apathy on the part of members of the profession all over the country. I have talked to them about an idea some of us had in mind a long time. I had influence enough upon the last President of the Association, Dr. Worth, to have him include in his address to the House of Delegates a suggestion I made to him, to the following effect. The House of Delegates meets as a body. It could meet at any time it pleased, more than once a year if desired, and the Scientific Assembly usually meets with it.

There is no reason why we could not divide the United States into territorial districts most suitable for meetings. You in this region could have the Northwest section or division of the American Medical Association; in the southern part of the west there could be another. We could divide the country so there would be nine. the New England Division, Middle States Division, Southwestern Division, North of the Lakes Division, South of the Lakes, and so on. According to methods of communication to divide the country into territories so that members of the association in each territory could easily go to the towns in that section for scientific meetings of the division. You would make your own program as you have done here, for a clinical program, for papers, and other matters of professional advancement. You would not have any business organization unless it would be to meet to elect officers of your division, who would be a president and vice-president, and so on, necessary to carry on your work, or a committee. It could be very easily arranged so that the president of this Northwestern or Pacific Division of the American Medical Association could be a vice-president of the American Medical Association while he is acting as president of the Division. We would have nine vice-presidents. It could easily be arranged that each division should be represented by a trustee who would be nominated at the proper time for three years of service by the division whom he represents, so that you would be represented there.

You would continue the same relationship to the American Medical Association that you have now. You would elect your delegates to the House of Delegates, and therefore you would take part in the business organization, and a representative of the whole Association, your trustee, would meet with the trustees and so on. And once in nine years any division of the whole Association would meet with each other division and in that way instead of five or six thousand Fellows of the Association attending the annual meeting you would multiply that by nine times, multiply the professional advancement that such meetings could give to just nine times the number of members. Besides you are going to be more closely knit together, visit each other from different divisions, get in closer contact and be better acquainted, and it would be for the benefit of us all, as members of one Association, and we would be more likely to get together for the moral support for any of the movements we would want to put across.

DISCUSSION

Dr. W. T. Williamson, of Portland: We have had such a splendid summary of the benefits and functions of the American Medical Association. The institution has been brought down chronologically to the present time. Dr. Simmons has genuine executive ability that has always appealed to me, and I want to say in the face of friend or foe that he is one of the most competent men, in my judgment, that could be found in the United States. Of course it is easy for me to say that now in the face of the fact that the Journal which he has handled has become the success you all know it has. Why, gentlemen, what would the American Medical Association be without the Journal? It would be a lot of men banded together without a cent in their pockets. The money has made all the great movements possible, has run up the property of the Association to the millions, has achieved so much, has put new journals in the field, has put special journals in the field, has a journal in another language in the field, and is now doing the things Dr. Billings has told us.

SURGICAL CONSIDERATIONS OF GOITER

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I will go into the goiter classification so we will have a basis to go on. First of all we have the normal thyroid, and the normal thyroid is made up of moderate amount of epithelium and a full amount of colloid. Then in your adolescent goiter the microscopic picture is much the same as in the normal. So we see no different picture, but we know that the patient has a goiter because it has other than the normal amount of colloid. Your colloid is increased, your epithelium is decreased. Besides that you have hypertrophy of the gland. Then there is adenoma, which also may be toxic or nontoxic, but you can't tell from looking at it microscopically whether it is one or the other. The picture inside the capsule of your adenoma may be normal, it may be colloid, it may apparently be hyperplastic, it may be all mixed up. But the adenoma is subject to degeneration following hemorrhages, the hemorrhage frequently taking place inside the capsule of adenomas, as a consequence of which we find degenerating cystic goiter and fibrous scars, and it is very seldom that you see a long standing adenoma of the thyroid gland that does not present evidence of old hemorrhage within it.

There is a rarer condition known as adenomatosis. The diagnosis is very difficult except after removal. Such conditions as carcinoma, sarcoma, and tuberculous involvement, are simply superadded qualities of goiter, so we wont take them up. They are treated like sarcoma and carcinoma elsewhere. Now, simple goiter, including the adolescent, which comes at the period of adolescence, is probably due to deficiency in iodin intake, plus infection. If you take a map of the United States and travel through the states in the north, beginning away over in Lake Ontario and following along the Canadian border, and then go down the Pacific Coast to about the middle of California, and then go eastward, including Nevada, Utah, and northward to include Wyoming, Washington, Oregon, Idaho and Montana, you have the goiter districts of the northern part of the western hemisphere, North America. That goiter belt happens to be just along the line where the great ice sheet spread over the continent during the glacial period.

I shall add to the deficiency in iodin, infection. I think the work of McGarrison in India too highly suggestive of infection to be thrown out. You may recall that he took fourteen soldiers to a so-called goiter well in India. Seven of the soldiers were given the waters that came from the well, the other seven had the same water, only it was boiled. Of the seven that got the unboiled water every one of them developed goiter, including himself. The other seven who drank the boiled water from the same source didn't get it. Now, doesn't that look like some organic thing in water that was destroyed by boiling.

Observe that the work in Akron with the school children has been very definite and to the point in preventing simple goiter among school children. That work has been going on over four years now. They have kept very careful records of those school children. For one month a year they take one gram, 15 grains of sodium iodide, that is one-half a grain a day, and the existence of goiter in Akron (Ohio is quite a state for goiter) has decreased very much. Figures are available and they are well worth looking at. Moreover, in those children who did have goiter, were much improved and in many cases the goiter disappeared. I think the prevention of simple goiter is a public health problem and should be taken up in that way, and where possible the school children ought to have iodin at proper intervals and in proper amounts.

Adolescent goiter appears at adolescence, the time of maturity, mostly in girls, 88 per cent of all goiters being in the female sex, only 12 per cent in the male. That applies to the simple goiters and to the toxic goiters; the proportion holds in number. The adolescent goiter is soft, bilateral, no thrill, no symptoms. The mother brings the girl to you because she notices an enlargement of the neck. Many adolescent goiters merge into other types of goiter. Lots of them become colloid goiters. Unfortunately some of them become exophthalmic or hyperplastic goiters. Then we have the colloid goiter which is also soft and diffuse, and sometimes you can feel minute nodules not over half a centimeter in diameter, no murmur, no thrill, usually larger in the adolescent and they are frequently confounded with adenoma and vice versa. Adenomas are frequently confounded with the colloid groups. I want you to know the difference.

The adenomas are the largest group of all. They form over one-half of the goiters that the surgeon sees. Dr. Hunter has confirmed that in a personal conversation a few months ago, that over half of his cases are adenoma. In 1911 Plummer wrote the first articles on this. They called them tumors but they had not recognized the clinical consequences of them and they are clinically important. They develop early in adult life. Let me show you. This lady was kind enough to volunteer her services. A typical multiple adenoma. Born in Ohio, a goiter state. At 12 years of age the goiter began. She has been in this state about 13 years; didn't do the goiter any good; it didn't do it any harm probably. The progressive enlargement of these tumors is encroaching on the normal thyroid gland. Those are the kind of cases that often develop hypertrophy. By pressure destruction of the thyroid tissue they cut off the secretion, and the secretion from the adenoma will not replace secretion from the normal thyroid gland. It doesn't do it, so you can have toxic symptoms, which this lady has now had for the last two years, tachycardia, slight tremor, loss in weight.

Unfortunately, from the standpoint of scientific investigation, adenomas do not occur in the lower animals. We cannot study them in the lower animals. They occur apparently only in man. They probably liberate toxin which goes through the system slowly and after the elapse of a sufficient time, 17½ years is the average according to Plummer's statistics, become toxic. In this lady it was about 25 years before her toxic symptoms began. But the average is about 17½ years before they develop toxic symptoms. These toxic symptoms are tachycardia first, tremor, loss of weight, nervousness or restlessness, sleeplesness, and irritability, but they do not develop exophthalmos. This lady has not exophthalmos, nor will she have. You do not see any cases of exophthalmos from adenoma. You occasionally see the combination of adenoma plus hyperplasia. Hyperplasia is the one thing that will give you exophthalmos. You can have a cretin with a great big goiter, no function of the thyroid gland, and you have got to have a thyroid gland to get function. Now, then, practically all of these adenomas produce symptoms if a sufficient time elapses. Adenomas begin in the adolescent period.

There are also other mixed types, the mixed type of adenoma plus colloid that is most common by far. You will find adenoma in colloid goiter. The thyroid will function but the adenoma will keep on growing and growing. It is the tendency of these adenomas to grow so large as to choke off the thyroid gland. That is one of the things that makes them bad. The hyperplastic goiter is by far one of the most important because it is so difficult to get at the cause.

Tachycardia and nervousness are the first symptoms, beginning around 20 to 25, and in women of course in the vast majority of cases—80 per cent. The diagnosis will find hysteria, neurasthenia, and the patient has had or is having domestic difficulty. Domestic difficulties are common with these cases. That is because they are irritable. Their husbands get mad at them and then the scrap begins, and then goes on in a vicious circle. If the patient were taken and put to bed, given complete rest, then the chances of getting well would be much improved. That patient might get quite well, but the threshold or margin of resistance is low and recurrences are very common, so that we see patients who have been apparently cured of goiter relapse. In addition to the rest in bed, a high calory diet should be given, because they are burning up their fat, their metabolism is increased. Nervousness and the rapid pulse begin, and then soon there is a fine tremor and the eye changes are noticeable, and the first of the eye changes is the not winking of the eye. The eye never winks the normal number per minute, and we have a slight edema of the upper lid and a partial fixation of the upper lid. Then it goes on to a protrusion of the eye, exophthalmos.

The type of nervousness is more or less characteristic and crying is one of the commonest things, even crying with men. Young men will cry sometimes without any assignable reason, no adequate cause. There is sleeplessness. Irritability: they complain about little things; that is, if a mother she will worry about her children or she will scold them where she had not done so before. She will be irritable with her husband and that is what makes him mad. He does not understand. He thinks it is just cussedness with her. It is not; she is sick. Then always the desire to be alone; they don't want to be in company. They like to be alone in these stages. Then there is weight loss and increased appetite. The appetite is tremendous sometimes, but the weight goes down, and that of course is due to the increased metabolism. Now, then, the symptoms go on increasing from that until they are so far advanced that he who runs may read. It is just as plain as the writing on the wall. It is easy to make a diagnosis of the late stage, but not to make a diagnosis of the early stages and get those patients under treatment at once.

Now, the treatment. The adolescent goiter responds usually to iodin or thyroxin. Small doses of thyroxin will sometimes have a remarkable effect on adolescent goiter, or doses of iodin continued. If it does not respond it may go on growing into colloid goiter or something else comes along, possibly the factor of infection.

The adenomas are surgical from the onset. Adenomas belong to the domain of the surgeon and not to the domain of the physician. He can't do anything for them. He can give them iodin, quinin, give them x-ray, radium, and he wont do them any good. He might do a lot of harm if he gives them x-ray or radium. Why? Because he will destroy the normal thyroid gland and produce hyperthyroidism on top of that. There is no medicine we know of yet that will do anything for adenoma. They should be excised early before the toxic symptoms have begun. We are not going to get anywhere by medical treatment, and just as soon as they are recognized they are better out than in. They are not going to do that patient any good. There are few of them that do not produce toxic symptoms. If sufficient time elapses, they will keep on growing, so take them out early. Too many patients are told a little nodule in the thyroid gland, adenoma may be mentioned, to leave it alone, that it does not need to be touched. That is a mistake. Those cases ought to be taken out as soon as adenoma is recognized. The adenoma ought to be removed. But when they are removed preserve normal thyroid sufficient to carry on the body functions as they should be carried on. That can often be done by incising the thyroid gland over the adenoma and shelling it out, or dissect out a small piece of the thyroid in a wedge shape, or some such thing as that.

Recurrences are fairly common after the removal of adenoma. Why? Because the surgeon has failed to examine both lobes thoroughly and carefully. He has not palpated every part of that goiter. He has not removed all the little adenomas that are there, and they grow up into big people, and then the patient comes back with another goiter and the man is more or less humiliated. Therefore, examine both lobes. Do not make a little incision and take out some of the adenoma and leave the rest in.

The treatment of exophthalmic or the hyperplastic goiter. If you can get your cases early treatment is relatively easy. You can excise parts of both lobes and get your patient perfectly well, but we seldom see them that way. Those cases have often gone through the hands of several physicians and are treated with various medicines, with x-ray, radium, and everything like that, and they don't get well. Valuable time is lost because the damaged heart, the damaged liver and the damaged nervous system are left to the surgeon to take care of. He cannot cure these; he can only make them better. So early surgery is the surgery for exophthalmic goiter. A careful study should be made of each case, and a more careful study of the psychic condition of the patient. How is that patient going to feel about an operation? Are they fearful? Fear predominates in them. They are afraid they are going to die. If you cannot get their confidence do not try to do surgery on them. You will make a big mistake if you do. Let them go to somebody else who will get their confidence. They will die in your hands. Study your patient's metabolism. That gives you some indication of them, but not prognostic, unfortunately, only diagnostic. The element of muscular weakness is another important thing. A patient with exophthalmic goiter who has great muscular weakness in the legs and can scarcely walk is a dangerous risk. That patient may need treatment in bed for a long time or may often need x-ray. The removal of bad tonsils for them can be done safely, and bad teeth, but be very careful that the operation is not severe. They will usually stand the removal of tonsils very nicely where they wont stand the removal of goiter.

Now, then, commencing with ligation. I am talking about bad cases, desperate risks, the patient nearly dead, having only a little hold on life, heart all shot to pieces, heart enlarged, all sorts of symptoms, pulse fast, basic metabolic rate high, tremors, great loss of weight. Take those and study them a while, get their confidence, and try a ligation if you can. Ligate perhaps only one artery but ligate it so that you get all the nerves you can. It is not the ligation of the artery, it is not the cutting off of the blood, it is doing something to the sympathetic.

If the patient wont tolerate a ligation you might possibly use radium emanations. I have done that. I don't know of anybody else having done that. They may do it later. But we can get radium emanation in very minute tubes not more than one-eighth of an inch long. That radium emanation is a gas you know, which is collected by machinery, and those little capillary glass tubes are put in the substance of the thyroid gland through a small puncture and the glass tube is left there until taken out. That can be done just like giving a hypodermic. The patient doesn't need to go to hospital. Sometimes you can do it in the office or in bed. It is better to have the patient in bed to have him under observation. And for a month we put in six of those, three on each side, and the total which corresponds to six or eight milligrams of radium. It is the emanations from that. That emanation works for about 30 days and then it is all gone. About a month and the patient may be ready for ligation.

Do not let the patient know that an operation is going to take place. A method perfected a number of years ago has proven of considerable value in some of these cases. Ether affects the heart, kidneys, liver, it causes vomiting, and so does chloroform also. Give them gas, oxygen, or local anesthetic. Do not subject them if you can avoid it to ether. Study the reaction towards your minor procedure; how does that patient react after the ligation.

When you get to the operation and your anesthetist tells you the patient's pulse is rising and the blood pressure is going up, stop, put pieces of gauze or something in the wound or a couple of skin clips, close it up and send the patient to bed, and finish up some other time. It is our desire to complete an operation at one sitting that has led to many fatalities. That has occurred to me a good many times. I could not get it into my head to stop. I wanted to finish it. But he who fights and runs away will live to fight another day.

The after care is very important in these cases. There is an elevation of the temperature and a great increase in the metabolic rate. Of course you can keep down the temperature, you can't keep down the pulse so easily, but you can keep down the temperature. The temperature will go up to 106 and 107 sometimes. When the temperature begins to go up put an ice pack over the heart, another one over the head, two or three along the body, depending upon the temperature, but put on enough ice to keep the temperature close to normal, for every degree of fever they have above normal the metabolism is increased ten per cent. With six degrees of fever, which would be only 104 or 105 you have sixty per cent increase in the basal metabolism. Cut that down just as much as you can.

DISCUSSION

Dr. J. E. Else, of Portland: I don't believe there is any place for radiation in the treatment of toxic goiter other than what Dr. Terry has told us. The use of x-ray has done much harm; I think it is positively dangerous and you practically always get a recurrence. I think it has been demonstrated that goiter is primarily due to iodin deficiency. Kimball and Marine have shown that adolescent goiter is almost entirely preventable by the use of sodium iodide. I want to call attention to the fact that toxic goiters are precipitated by severe strain. In a woman we see toxic goiter come on probably more frequently in connection with pregnancy and at the menopause than at any other period. We see the toxic goiter developing after severe nervous strain, after a shock, we see them after a severe infection.

The second point I want to discuss is the matter of making the operative procedure safe. Dr. Terry has told you it is important to see the case early. It is absolutely important. I am speaking now of the hyperplastic type. We find that the high metabolic rate begins earlier than the physical manifestations. It rises, but it depends upon the severity of the case. It comes up to some point like that, runs along to the maximum point of intensity, and then we get a period of retrogression.

Now as to the matter of making operations safe. Dr. Terry has said we must get the cases early. If you have a high metabolic rate, or if you have a metabolic rate that is rising rapidly, those cases are always dangerous. Those are the cases that do badly. What are we going to do. Are we going to help the patient during that period. If we wait until the patient comes to this period we are likely to bring him out with a badly damaged heart. We have got to do something earlier. I think with Dr. Terry that radium emanation is of great value.

Finally I want to speak of insufficient after care. A great many of our cases do not get the results they ought to because we do not care of them afterwards. We simply operate on them, keep them in hospital a week or two and let them go. A surgeon's responsibility in toxic goiter does not end when the operation is over; it does not end when the patient leaves the hospital; it does not end until the patient has been restored as nearly as possible to a normal condition.

Dr. H. R. Storr, of Vancouver, B.C.: Referring to Dr. Bloodgood's simile, the end of the chapter on goiter has not yet been written. At the present time I think we are about half way through it. Dr. Terry spoke of the iodin content and the gving of iodin at Akron, Ohio. I might say that in the Canadian provinces of Saskatchewan, Alberta, British Columbia, the government has sent out to every practitioner direct instructions, as to the amount of iodin to give, and the percentage of children with adolescent goiter that recover under that treatment. So that we are not so far behind up there. Now, there is one more thing. The trouble is that the histological and pathological classification is so intricate forming a standard which is more or less useless.

Dr. Terry: In the crisis in the basal metabolic rate, do not do anything major. Tide the patient over if you have to, but preferably by a ligation or radium. In regard to the calssification, I simply write here toxic or the simple adenoma. Asymmetrcal goiters are adenoma, symmetrical goiters are the hyperplastic and the colloid, and the adolescent come in there to. The big problem is the exophthalmic goiter. The toxic adenomas are very much simpler, are very much easier to cure, whatever their etiology is.

EXPERIMENTAL STUDIES IN THE ETIOLOGY OF EPIDEMIC ENCEPHALITIS, EPIDEMIC HICCUP, SPASMODIC TORTICOLLIS AND ALLIED CONDITIONS.

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During the past two years it has been my good fortune to be enabled to study the question of the etiology of encephalitis in its various forms. This study has been made possible through the very splendid co-operation of Dr. Sheldon and his associates in the department of neurology at the Mayo clinic. From the very beginning it was thought that this disease might be due to a filterable virus so-called or to micro-organisms that have peculiar neurotrophic properties. The technique therefore from the beginning was to test both possibilities. The place for search of a possible causative agent holding out hope for success was the nose, throat, nasal pharynx, tonsils, and infected teeth, in the main. And by the use of these methods, in which we took pains to exclude the ordinary contaminating organisms of the throat, we were rather surprised to find that in patients with encephalitis there was present in practically all of them an unusually marked, red, infected throat, often infected tonsils, and also infection in and about the teeth. And I think I can best illustrate the scope of the work, the technique employed, by giving you first the results in one fatal case. Early in the work, from the organisms that we found that were apparently causing it, we prepared an antitoxin in serum in a horse by the repeated injections of one of these strains that come from typical or atypical cases of encephalitis. It was with this serum we were able to identify the organisms from the different cases, at least in large part.

The patient in which these experiments were done, which will be given in detail, was a woman who, after a period of worrying began to have peculiar mental symptoms, hallucinations of one kind and another, and one night developed a marked tremor and twitching of muscles. This continued for some time, but she soon developed all the classical symptoms of lethargic encephalitis and died. The section of the brain is shown here. There were no lesions about that area or hemorrhage. Microscopically the section showed the usual signs of lethargic encephalitis. Cultures were taken from the various parts of the brain, spinal fluid, and so forth. Most of these cultures were negative, but over the lesion in the brain the characteristic streptococci were isolated.

In this slide we show the organisms in the lesions in the brain of this patient. During life there was found a marked dental infection, caries and pyorrhea infection. The naso-pharynx was very moist and infected. From the pyorrhea, from the teeth, from the tonsils, and from the naso-pharynx an organism was isolated by way of the animal, and after death the same type of organism was isolated from the apex of one of the teeth that was isolated from the brain. This rabbit was injected with the culture and isolated. The lethargic state is illustrated by the photograph. Compare the attitude in this picture with this. The rabbit was so sleepy it could be placed on its side and its back without awakening it. Now, I wish to call attention to the fact that it is lying on its back and there is clear evidence of the rigidity of the extremities, also the fact that the patient had the same condition that the rabbit had.

In one case the patient's tonsils were removed and they contained a very marked infection although the patient was never aware of a sore throat. A vaccine was prepared from the strain isolated from the brains of some of these rabbits. The patient was sent home and an increased dose of this vaccine was used over a period of six months. During that six months there was cessation of progress and intervals of marked improvement and altogether the patient was distinctly better but by no means well. Examination of the throat showed that the tonsils were cleanly removed and instead of the throat being red it was dry and appeared normal. On two occasions I swabbed the throat in the way I had done before and injected a series of animals and in both instances the animals remained well. It would appear from these tests in this patient that by removing the tonsils, and by immunization by vaccine of the patient with the specific organisms we had apparently eradicated this organism from her nose and throat.

With it the patient is better, whereas in the six months previously she had become very much worse. She probably will never entirely recover. It does not seem possible that a condition of this kind that has existed for so long a time could recover because it is reasonable to suppose there must be changes that would be permanent.

This series of respiratory tracings of a patient that had epidemic hiccup concerned an individual, a young man, who from no apparent cause developed uncontrollable spasms of the diaphragm. At the time of this study they had existed for nearly 48 hours. He came to the laboratory, and as he came to the laboratory the spasms disappeared. He was rather worried about what was happening to him. He did not know us well. They disappeared and remained absent for four or five hours, then they recurred. I left word with him that if they did he should be sure and let me know, that I wished him to come back. In the evening I received a rather urgent telephone message from one of his friends from the pool hall saying his man had a hiccup that was so bad he couldn't speak, and that they were worried about him. I asked him whether he could walk. Yes, he could walk. I told him to go to the laboratory, that I would meet him there, which I did. He was pale; he was exhausted; the spasms had been terrific. They continued all the time we were walking to the laboratory. I attempted to keep his mind off his condition, talked of the weather and other things. He sat down. I had adjusted the band around his abdomen, etc., and as I was ready to take the tracing the spasms disappeared. But instead of sending him away I was now determined to see whether there might not be other changes in the respiratory tract that I had seen in rabbits so many times. At times they might not have spasms of the diaphragm but they had very peculiar respiration. And this first tracing was immediately taken after the spasms had ceased. In looking at him it appeared he was breathing normally, but under the record, very irregularly as to time and particularly as to rate and volume.

In all of eight patients with so-called epidemic hiccup we succeeded in reproducing the disease in animals. The question as to how this peculiar organism produced spasms of the diaphragm was of course vital. As far as the lesions were concerned we had abundance of evidence, and as far as the result of the injection of the live organism was concerned it was very plain that the organism tended to localize at the anterior surface of the medulla and along the anterior cervical nerve roots. So in two cases we have studied the question as to whether this organism might not produce a poison in the culture tubes that would produce the same thing. That we have found to be the case. Briefly stated, that phase of the work can be summarized by stating that at the time when small doses of the dead hiccup streptococci are injected intra-cerebrally into rabbits and produce spasms of the diaphragm, at that time it is possible to demonstrate by proper methods the development of the poison in the filtrate and in the culture medium, that the dead, heat-killed organisms injected in larger doses also produce spasms of the diaphragm.

I have refrained from the use of the word "toxic" because I don't know whether this is a true toxin for the reason there are not enough experiments done to speak definitely on that point. But we have attempted to immunize animals both by intracerebral and other methods of injection with this filtrate that contains the poison that makes the spasm, and thus far we have failed to produce immunity. We have had as many as three attacks of spasms of the diaphragm in the same rabbit following repeated inoculations. The duration, however, of the interval from the time of the injections may not be long enough. The longest duration was ten days and the shortest three. So that we are not sure whether it is possible to immunize these animals against this poison or not, nor are we able to say whether it is a true toxin or not. Indications are that it is not a true toxin, but it is a poison. In the actively growing culture the poison may be made and unmade in a very short period of itme. It is necessary that the tests be done at the right moment after the culture is separated, or the micro-organisms are separated. It is possible to have the poison remain demonstrably present as long as ten days; longer than that no test has been made.

In the light of these experiments and the fact that in all the cultures or tests which we have made in attempting to prove the presence of a filterable virus we have had negative results. And with the fact that in all of these we find a certain type of organism in the case of the encephalitis group, an organism that we found present in forty cases with which not only have the symptoms of encephalitis and the lesions been reproduced, but often we have been able to reproduce the very type of disease present in the patient. And we have been able to isolate an organism from which we can reproduce the patient's disease in animals and isolate it again from them. Moreover an organism which we have demonstrated in the lesions of ten cases of various forms of encephalitis, an organism that has peculiar cultural properties, an organism which is agglutinated with serum prepared from one strain, we believe must bear etiological relationship to this very disease. Furthermore from these studies it looks as if epidemic hiccup is a disease very closely allied to encephalitis, as is clear from the clinical evidence, and this is also due to an organism very closely related to the strain isolated from a definite case of encephalitis. And, finally, we have a series of closely related conditions, as spasmodic torticollis and respiratory arrhythemias, that appear to be due to a similar cause. We are not drawing sweeping conclusions. The field is very large; the difficulties are many. The dosage must be right; the culture medium must be exactly right or you do not succeed in isolating the organism. But anyway we can say, as far as the epidemic hiccup strain is concerned, that that organism produces and has the power of making a poison at the time when it causes hiccup and spasms of the diaphragm, that when injected into the animals will reproduce the disease.

(NOTE: These moving pictures were most marvelous in reproducing in unbelievable exactitude the positions and movements in rabbits inoculated with what Rosenow affirms is the causative green-producing streptococcus of spasmodic hiccup, torticollis, respiratory arrhythmias, and lethargic encephalitis, in human patients. The disease in the rabbit so magically simulated that in the human—the rigid coma of encephalitis, the astounding respiratory arhythmias, the bizarre postures and movements of spasmodic torticollis—that one felt as it if were the work of a conjurer. One even fancied a facial resemblance in the rabbit to the patient and it was even intimated that the case of a spectacled female with torticollis, that spectacle-like suggestions could be observed on the face of the rabbit. The truly miraculous impression Rosenow's moving picture revelations created is not even feebly suggested by this imperfect report of his lecture, shorn of the all important visual demonstrations. It was the marvel and sensation of the meeting.—Editor.)

DIGITALIS AND QUINIDINE IN THE TREATMENT OF CERTAIN TYPES OF CHRONIC CARDIAC DISEASE.

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I do not know of anything that could be more appropriate as an introduction to any discussion of treatment than to repeat to you two sentences that were written by Withering in 1785. He said: "It is much easier to write upon a disease than upon a remedy. The former, that is, the disease, is in the hands of nature, and a faithful observer with an eye of tolerable judgment cannot fail to delineate a likeness; the latter, that is the treatment, will ever be subject to the whims, inaccuracies and the blindness of mankind." Withering gave an excellent description of all our present day attempts to prescribe treatment in any form, with any drug for any disease. The most striking thing about digitalis is how much pertaining to it in Withering's book of 1785 should have been remembered and put into practice and how little of that description and direction of Withering was applied to patients until the last decade, or decade and a half; Withering's definition of when and how to use digitalis summed up in one sentence contains more information about digitalis than all the writings and practice in medicine of the pharmacologists down to about 1901. Withering said, "Let the medicine be continued until it either acts on the kidneys, stomach, pulse or the bowels; let it be stopped upon the first appearance of any one of these effects."

If we had followed directions in that sentence of Withering that covers the period from 1785 to 1900 the poor use of digitalis would not have existed. It is a matter of considerable interest that going back over the books on medicine written by the eminent English clinicians from 1803 to 1904 down to the publication of Mackenzie's books in 1904 or 1905, namely, 100 years, we find that there is nothing practical in them that serves as a guide post for the adequate use of digitalis. Our own wonderful Austin Flint in his book gives us no satisfactory information. Coming a little later Osler, much beloved in this country.

and a wonderful clinician, failed to teach us how to use digitalis. That is certainly true of all the early editions of his books and it is only in the later ones you can get really good directions for the use of the drug. I think it is of interest always to have a few historical landmarks, so I have put on the board the important cardiac drugs and the dates of their introduction. Digitalis, Withering, 1785; strophanthus, 1890; quinidin sulphate, 1918.

Let me take up first the use of digitalis from the point of view of dosage. I want to introduce that idea by saying that digitalis is a drug that in my experience in about 99 per cent of cases is misused along the lines of giving the patient an insufficient dosage. I have allowed 1 per cent for cases that have come under my observation that have receeived too large a dosage of digitalis. To be more exact it would be a small fraction of one per cent because of the only experience I ever had of a cardiac case that prior to coming to the hospital under my own observation, had too much digitalis. This case that I have observed, in which too much digitalis was given, was a case of my own in which I deliberately took a long chance in a desperate case and gave a large dose of strophanthus intravenously and the result was disastrous. That was done knowingily. As I said, it was done taking a long chance in a desperate case that had not responded up to that time satisfactorily to digitalis therapy. The patient was in extremis, and I took the chance of adding to the previous digitalis an intravenous dose of strophanthus and the patient went into heart block and died a short time afterwards.

How are we going to determine the dosage of digitalis? Or, putting it in another way, what method of giving digitalis should we follow? There are three safe methods at the present time; the single large dose method; the modified or divided large dose method; and the small dose method. In parenthesis let me say that the small dose method of today would have been a large dose method to our teachers in most cases when we were in medical school. The large dose single dose method is based very extensively on the wonderful work in this country of Thatcher, a pharmacologist, and Eggleston, the clinician, who had worked with him, and it is based upon the determination of the activity of the digitalis by injecting for the tests digitalis bodies into the circulation of the cat, so it is often spoken of as the cat-unit-basis for dosage of digitalis.

Ordinarily it works out as a gram and a half of digitalis leaves per hundred pounds of body weight, or two grams of digitalis for a person weighing 150 pounds, or five and a half fluid drams of the tincture of digitalis, for a person weighing 150 pounds.

There is some difficulty in telling how much a cardiac case weighs, apart from the difficulty of getting the patient on the scales for the process of weighing. The patient with a cardiac disease may be edematous and the edema weighs five pounds, fifteen pounds or thirty pounds. It is not his body weigh in useless water that you want to use in determining his weight from the point of view of giving the digitalis dose. So if you weigh a patient on the scales you have got to guess how much of his weight is real patient and how much of it is useless edema. The corollary to that is most of us can guess pretty well how much the patient really weighs, looking at him, guessing his height, and then figuring out that he looks like a man who weighs 175 pounds when he was not water logged, and put him 175 pounds in the formula. Now, what are the advantages, or to put it in another way, the real clinical uses of a single large dose of digitalis? To my mind there is only one condition in which it is very desirable to follow this method, and that condition exists when you see a patient for the first time with cardiac insufficiency who has not previously been under any treatment and whose condition is so extreme that you fear that the next one, two or three hours, unless some striking change occurs, will result in the patient's death. Under those circumstances a gram and a half of digitalis leaves for 150 pounds of body weight may be life saving for that particular patient. The real reason, then, for using the large dosage method on that basis in this type of case is that by giving a very large amount at one time you can get a digitalis effect within sixty or ninety minutes, and that short interval may be the important factor in determining the difference between life and death.

To sum that up, then, that is a method of great value in particular cases, but it does not need to be used often. The modified large dosage method consist in giving when the patient first comes in a half gram of powdered digitalis leaves (equal to a little over a dram of the tincture), and repeating the dose so that in the first two or four hours, depending upon the severity of the symptoms, the patient gets one gram of powdered digitalis leaves, and then continue at the level of 2-10 of a gram, or half dram of the tincture, every four hours until the average dose that is needed is obtained, and for most patients of average size that ranges between 1.8 and 2.2 grams of powered digitalis leaves, or four and a half to five and a half drams of the tincture.

The small dose method consist in starting either with a .2 of a gram, or half dram of the tincture, and giving it every four hours for the first twenty-four hours and then dropping to a 1-10 of a gram, or 15 minims of the tincture three times a day, or possibly every four hours for the second day, and then 1-10 of a gram three times a day for the third day; or beginning when the patient is not so very uncomfortable with a dosage of 1-10 of a gram and give it three times a day until you get a digitalis effect that is adequate, and ordinarily that will come on about the fourth day of the digitalis therapy.

What I have said up to the present time wholly concerns patients with that stage of cardiac condition in which compensation is badly broken, the patient being edematous, very uncomfortable, and so on, and you are attempting therapeutically to get the patient into a fairly normal balanced condition as soon as you can. Having gotten him into that condition the problem then comes as to his after treatment. That is a very important phase of digitalis therapy—a large dose, because all of these methods after all are large dose methods—a large dose in the beginning, and then a continuation of the proper amount of digitalis to keep the patient in statu quo at what level we can get him as a result of our treatment of his cardiac case.

That brings up the question of the absorption and excretion from the body of the digitalis preparations. It has been rather difficult to work that out, but the evidence seems to show that the average individual of average size excretes about 1-10 of a gram, or a gram and a half of digitalis leaves per twenty-four hours. If we give him much under 1-10 of a gram per twenty-four hours he is going to lose his digitalis effect, because the digitalis bodies present in his system are decreasing, and if we give him much over a 1-10 of a gram in twenty-four hours he is slowly adding to the sum total of digitalis bodies in his system and toxic effects of digitalis soonor or later will appear. Of course the first of those is nausea, which is the cardinal and important sign for sufficient digitalis therapy. Secondly, we give these patients, if they need a continuation of digitalis therapy, 5-100 of a gram, or about 1 grain, or 10 minims of the tincture of digitalis leaves night and morning. That is not quite enough for some patients, and you will find their pulse begins to go up, or that their edema begins to reappear and you have to increase slightly the amount, so you give 1-10 of a gram in the morning and 5-100 at night; and in other cases you will find that is slightly too much and you give 5-100 twice one day, and 5-100 once tomorrow, and keep on in that cycle. The problem is to keep the patient digitalized in order that his heart action will be the best possible under the circumstances of the disability of the cardiac disease that that particular patient is suffering from.

I show this case to illustrate auricular fibrillation. That is the type of cardiac disease in which digitalis is supposed to give its most striking effect. There are two fibrillating cases; one with a fast heart rate, and one with a slow heart rate. All the emphasis in recent years tends to have been placed upon the fibrillating case, on the fast heart rate, and the feeling has gone abroad among the profession that if the pulse and heart rate happen to be slow digitalis is not indicated. That is quite an erroneous hypothesis.

This chart shows the effect of digitalis on a patient with fibrillation with a very rapid heart rate. The deep line represents the heart rate counted at the apex, and in parenthesis let me emphasize the point that feeling the pulse when the pulse is irregular in rhythm may be entirely misleading and you should never judge the heart rate with the stethescope over the apex of the heart.

Here is a patient who had a rate of 140 or over at the apex; pulse rate of 120 to 130. These lines represent days in which this patient receeived three doses, each 1-10 of a gram, of powdered digitalis leaves. It started on the second day of observation, there had been some slight drop in rate from simple rest in bed, then you can see the rapid decrease in heart rate and pulse rate and you can see the two lines coming together, namely, the disappearance of the pulse deficit, which occurs under the action of digitalis in fibrillating cases at a rapid rate. Now, this line here represents the fluid intake of the patient and this line with the solid dots, and the broken line connecting it represents the output of urine. You will see on the third day the patient's output had risen to 5,550 cc of urine from a level which had run somewhere about 500 cc. So that digitalis slowed the heart rate, caused a disappearance of the pulse deficit, and produced a marked diuresis; very satisfactory and adequate digitalis effects in a patient with a fast fibrillating heart.

Here is a more difficult case to get a digitalis action. The apex rate between 100 and 110, pulse rate running about 70. The patient was 59, chronic myocarditis, auricular fibrillation, and an old hemiplegia. Fluid intake 800 cc—that means a milk diet. Urine output 400, very slight increase in the urine output as a result of the digitalis therapy. D1 and D2 represent digitalis dosage, you will see it took some time for that digitalis to slow the apex rate from 110 to 80. Now this patient had a single dose of 1.8 grams of powdered digitalis leaves. The next day he had .2 of a gram of powdered digitalis leaves. That makes a total of two grams. And he had for fifteen days one-tenth of a gram of powdered digitalis leaves every six hours. He got 3.5 grams of digitalis leaves over a period of about six days in order to get that effect. I want you to see how much weight that patient had lost, some twenty odd pounds, as I remember it.

A great deal has been said recently by those describing digitalis therapy to indicate that digitalis is markedly effective only in fibrillating cases. That has created the idea in the professon that if the pulse is regular digitalis will probably not produce any satisfactory effect and consequently is not indicated for the patient, and many patients fail to receive digitalis as a result when digitalis would be helpful.

Furthermore, there is a large group of cardiac cases with regular rhythm and slow rate, who respond wonderfully well to digitalis therapy. The result of these observations justifies me in making the statement that rhythm and rate have relatively little to do with determining whether or not good digitalis effects are going to come from the use of the drug; and as a corrollary to that it is fair to state if you have a cardiac case with decompensation and edema, give them digitalis whether their rhythm is irregular or regular, whether their pulse rates are fast or slow. If you follow that idea you will get some wonderful digitalis effects.

Here is a regular rate, rapid pulse, 110, digitalis given, pulse slowed 45, urine jumps from 200 to 2600 cc. and the patient is markedly improved. That patient got for three days .2 of a gram powdered digitalis leaves every six hours, then for seven days, .3 of a gram, and that effect.

The next case illustrates the point, that your patient can lose a large amount of body fluid without there being much of a demonstrable increase in the urine. Here is the urine. Slight positive diuresis, but a big drop in body weight, roughly 15 kilograms, or over thirty pounds. That is unless you weigh your patients, or observe them clinically in regard to the amount of the edema, you may not be keeping track of how fast they are improving in the sense of losing excess of fluid.

The other point that I particularly wanted to emphasize is that heart rate and heart rhythm are not the important points in indicating what type of case is going to get a good digitalis effect. You can get splendid digitalis effects in fast fibrillators, in slow fibrillators, in fast regular hearts, and, most important of all, in slow rates and regular rhythm with normal electro-cardigraph tracings indicating, so far as the electrocardigraph does indicate, that there is no disturbance in the mechanism of the heart regarding rhythm.

I have only used in these cases digitalis in the form of powered leaves. The reason for that is that it is the simplest digitalis preparation that can possibly be used, because you do nothing but grind the leaves up, mix the powder with a little gum and have it stuck together in a pill. The rest of the treatment goes on in the patient's stomach. And I have continued to use that form of digitalis because the effects are perfectly satisfactory.

Just one thing about the tincture. Don't prescribe it as drops, but prescribe it as measured amounts. Those of you who have tried to drop digitalis will find that you have consumed a large amount of time in giving the patient the necessary number of drops to make up the necessary dosage of tincture. It takes about 2 1-2 drops to make a minim. If you are going to give your patient 60 minims you have to give 150 drops.

Powdered leaves, infusion and tincture are made under the regulations of the United States Pharmacopeia and give perfectly good digitalis effect provided the preparations come from good leaves, and good leaves grow wild all over this country. You have good digitalis growing in this state in the mountains. There is good digitalis growing in Minnesota; in Wisconsin, in West Virginia, and I doubt not but that it is growing in other states. I have used digitalis from all of those states and I know that it is just as good, and usually a little bit better, than foreign grown digitalis. It is also grown artificially in some of those states.

America can supply good digitalis for its American physicians. Now, these other preparations are good enough. They are not any better, however, than the ordinary digitalis, provided the leaves are obtained. They will cost your patients more, provide more profit for the druggist. You will notice its disadvantage to the patient in his pocket book, and an advantage to the druggist in his pocket book, and that is the only difference between the much vaunted digitalis preparations. Take the question of a digitalis that will not produce nausea. Any digitalis that will not produce nausea is poor digitalis, because one of its purposes is to produce nausea. If any drug man says to you I have a preparation of digitalis that will not nauseate your patients, you can say to him, "I thank you for the information, but you have told me your digitalis is no good. I do not want it."

Now, as to quinidine sulphate, and I can run over that rather rapidly, in 1918 observations showed that quinidine sulphate produced regular rhythm in cases that were fibrillating. That has been confirmed by many observers. There are one or two practical points that I think might be emphasized. The first of those is that quindine sulphate is a drug to which a considerable number of individuals have an idiosyncracy. You are all familiar with the effects that come from quinine in certain individuals, and they are just the same with quinidine sulphate.

It is desirable if you are going to give quinidine sulphate to give a trial dose before you institute a regular line of treatment, and ordinarily .2 of a gram, or 3 grains of the quinidine sulphate, is given and, if there are no toxic effects, four hours later it is repeated, and that is sufficient for the first day of treatment. Then the next day the dose is doubled so that you give .4 of a gram, and you give it five times, six times, or seven times—there is a good deal of variance there—in the day, and you keep it up until the patient's irregular rhythm becomes regular, or until some toxic effects develop, or until you conclude that the patient is not going to react to the drug by changing from fibrillation to regular rhythm.

The longer they have been fibrillating the worse the cardiac condition and the less probability of changing from an irregular to a regular rhythm as the result of quinidine. But as the cases have been reported about fifty per cent have been changed from irregular to regular rhythm. Now, what benefit is that to the patient? If your cardiac case is having poor cardiac function simply as the result of the fibrillation, changing the fibrillation to a regular rhythm will produce a very definite improvement in your patient.

The average cardiac case with fibrillation probably has about 30 per cent of disability on account of the fact that it is fibrillating, and about 70 per cent of his disability on account of other factors in his cardiac condition apart from the fibrillation. In other words, about 30 per cent of the cases that we can get from fibrillation to regular rhythm seem definitely better under ordinary methods of clinical observation than they were when they were fibrillating.

The slow fibrillators are very slightly improved in my experience by using quinidine sulphate. In fact quinidine has been on the whole distinctly disappointing, after you read the brilliant results claimed by a number of reporters.

Again, there are certain dangers in quinidine sulphate. I am inclined to think, like digitalis, these dangers have been somewhat overemphasized, but they do justify caution in pushing quinidine sulphate in large doses over long periods of time, in the case of auricular fibrillation that resists the treatment and does not change to a regular rhythm. There have been a number of cases of sudden death. Sudden death occurs in cardiac cases with digitalis, without digitalis, with quinidine, without quinidine, and so on, so that perhaps those deaths had no relation to the quinidine. Anyhow caution is necessary.

Then there has been a great deal of discussion as to whether digitalis and quindine should be combined, or quinidine should be used first without digitalis, or what method should he followed. There is a general swing of opinion towards the idea that if the patient has a badly broken compensation it is preferable to digitalis him first. After the digitalis has become effective discontinue the digitalis and then begin the use of quinidine sulphate. There are some theoretical objections to doing that because digitalis and quinidine are pharmacolgically antagonistic in some of their actions, but I shall not bother you with that part of the discussion.

It may be of interest to spend just a minute in explaining how quinidine sulphate acts. According to the brilliant experimental and clinical observations of Sir Thomas Lewis we know now that a heart fibrillates because instead of having the impulse start from sinoauricular node as it normally should, we have an impulse that is traveling around in the auricle in a circle and that circle is not a perfect circle, but the impulse is wandering through a sinuous course at a very rapid rate, and that stimulus traveling in that way sets up innumerable contractions in different parts of the muscle of the auricle, and these beieng transmitted, if they are strong enough, down the conduction system into the ventricles makes the irregular pulsation of the ventricles.

Now the action of quinidine sulphate is this: It prolongs the refractory period of the heart muscle. After the heart muscle is contracted there is a refractory interval during which it will not contract if the stimulus comes at that time. In addition it also delays conduction. Now, if its action is more to delay conduction it will continue this process and will be ineffective. If, on the other hand, it increases the period of refractory stage of the heart muscle at its maximum effect the result will be that this stimulus going around very rapidly will get back to this point before that particular piece of muscle has gotten over its refractory period and it will bump its head against a stone wall, as it were, and stop, and when it stops an opportunity is given for the impulse to swing back to the sino-auricular node and the heart goes ahead and beats in its regular normal rhythm. That is how quinidine sulphate works.

With that in mind you can understand that the chances are probably about 50-50 as to whether it will break the fibrillations or have no effect. It will break the fibrillations if it increases the length of this refractory period so it is long enough for the impulse to get back in time for the heart muscle to contract. If it slows the rate then it takes it too long for the stimulus to get around. When it does get around, the heart muscle is ready to contract and the fibrillation keeps up.

DISCUSSION

Dr. B. L. Gillis, of Vancouver, B.C.: I am pleased that Dr. Christian has brought out certain points. We in Canada are very much influenced by the teaching of the English school and particularly by the teachings of Sir James Mackenzie, who, as Dr. Christian has expressed it, has done so much in heart work, as to practically revolutionize it, and I have always personally been surprised at his limitation of the use of digitalis in heart disease.

With regard to quinidine, I had the privilege of hearing Sir Thomas Lewis give hs lectures on quinidine in Portland a few weeks ago and he mentioned one thing which I might speak of. He stressed the point that it should not be used where the patients were showing signs of venous congestion, and as a matter of fact he impressed on us we should only use quinidine in fibrillation in ambulant cases. That in the walking cases we ran less risk of causing harm to the patient and he said that certain cases were liable, if the auricular fibrillation, had been of long duration, to an embolus formation. He pointed out as a basis for his remarks that in seventy-six postmortem examinations of heart disease, eight out of twenty-three with auricular fibrillation, showed thromboid or antemortem clots in the auricles. In the remaining fifty-three cases without auricular fibirllation only four showed these antemortem clots. The effect of the quinidine, in starting of an auricle which has only been partly contractng, may be to loosen clots and set free emboli and in certain number of cases it might lessen the sudden death may be the result.

Dr. G. A. Dowling, of Seattle: I will emphasize, first, that in any form of treatment of heart disease, particularly the fibrillating heart, if you digitalize your patient and use the large doses, that patient should be under very careful and continuous observation. He had better be hospitalized. The same is equally true of quinidine. Furthermore, until the status of quinidine in the treatment of heart disease is more definitely settled it had better be left to the investigators to continue the investigation.

There is one question that I wish to ask. I have been much impressed at times at the inability of certain patients to take digitalis by mouth. Of course nausea is one of the effects of digitalis, but some cases certainly have a certain idiosyncrasy against the drug. I have been much impressed in finding that some of my patients, particularly with myocarditis of toxic origin, are absolutely unable to take digitalis in the smallest doses. I have been put to a great deal of embarrassment in trying to find something as a substitute. I would ask that question in closing the discussion.

Dr. Christian: In regard to these patients who are unable to take digitalis by mouth, most of them are unable to take the drug because they get almost immediately nauseated, and if the drug is given the vomit. That of course is not a digitalis effect, but it is just the same thing that we experience if we have eaten, let us say, fish, that was a little off color, and certainly I have found vomiting and nausea and vomiting and diarroehea, and subsequently there was associated with the experience the idea brought out by the taste of fish and the association, so that we are no longer able to eat fish, or that particular kind of fish, because the taste or the small or sometimes even the thought of the food stirs up a nausea.

Now, that kind of inability to take digitalis can be gotten around by getting digitalis into the system through the mouth with the taste concealed. That can be done sometimes only with the simple precaution of putting it in capsules, because after all most of the nausea comes from the sensation in that group of cases in the mouth. and giving powdered digitalis leaves in capsules, the capsules carefully cleaned on the outside, so that there is no trace of the powder and none of the taste. In other cases when the capsule dissolves in the stomach nausea comes and you can get around that by treating the capsule with salol so it is not dissolved until it gets by the pylorus.

There are other cases of cardiac disease in which the patient is vomiting, not by reason of the digitalis, but by reason of the cardiac disease, and those persons wont stop vomiting until you get a digitalis effect. Sometimes the physician says that the patient does not need digitalis because he is vomiting by reason of digitalis. I have often seen those cases in which the reverse was true. They not only need digitalis but they need it vry badly and they need it in a large dose to stop the vomiting. Vomiting is apt to be more or less psychic. If you will have an intelligent nurse give the digitalis in the periods of stomach quiescence, rather than by the clock, you can often give digitalis to patients between their vomiting bouts and they will retain it in their stomachs. It is not the taste of the digitalis that is making the vomiting it is the chronic congestion and the central nervous system disturbance of the cardiac disease.

There are other cases you cannot by those simple methods get around the proposition and I think there the best drug to give is a drug that can be given intravenously, a preparation of strophanthus, given intravenously in small doses. Strophanthin, probably half a milligram is as large a dose as a patient should have at one dose, and most cases should not have as much as one milligram in twenty-four hours. Usually half a milligram intravenously is sufficient. Ouabain is more toxic than strophantin and the dose should be still smaller, a third of a milligram given intravenously.

If you cannot get those drugs and very often you cannot, you can give some of the digitalis preparations intramuscularily. You can give the tincture by deep intramuscular injection and get your paitent started on a digitalis therapy, and in that group from which the vomiting comes from the cardiac disturbance, after one, or possibly two intramuscular or intravenous injections, you can continue the digitalis very easily by mouth.

I have referred to pharmocopeal preparations United States Pharmacopeia in digitalis. Digitalis leaves appear in the United States pharmacopeia under the dosage of 1-10 of a gram or one and a half grains. Now a lot of druggists will not fill your prescriptions for a adequate dosage of digitalis because they say they do not dare under the laws of the country put out ten times the dosage that is given as the standard dosage in the United States pharmacopeia.

Some of my colleagues in Boston have found that they could not get through the druggist the amount of digitalis the patient needed except by indirect methods of buying a large number of 1-10 grams doses and putting them together themselves. I happen to be one of the members of the committee of revision of the U. S. Pharmacopeia and I am trying to get introduced into the pharmacopeia not only an average dose for continuous use, for which 1-10 of a gram is correct, but also a statement that digitalis may be used in dosage up to two or two and a half grams in one dose to a patient who has not had digitalis.

TUMORS OF THE BREAST

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It is a very satisfactory condition to find that after thirty years investigation with tumors of the breast that the field is just as fertile for reinvestigation as it ever was before. And I remember hearing Dr. H. C. Ward give a lecture on digitalis in 1890, 32 years ago, almost as if it were the last word, and yet today I observe that two great authorities still feel they have still some further investigations to make in regard to the use of digitalis.

In a lesion of the breast we are confronted with certain definite diagnostic problems which must lead to certain definite methods of attack. The object of the diagnosis and the object of the attack is to give the patient with a cancer the best opportunity of a cure, and to save the breast in tumor, patients without cancer, and to give the patient that has nothing the matter the opportunity of returning home without an operation. When in active surgery with Dr. Halsted I felt that in less than two per cent of breast cases were we ever confronted with a diagnosis which led to the conclusion that no operation was indicated, while today in my own practice, in fifty per cent of the cases no operation is indicated.

Therefore, it is of the utmost importance for those of us who have a larger experience to formulate some method by which we can discover this group in which operation is not indicated. I have made one short contribution on that group and expect to make others, hoping to develop a method of physical examination of greater accuracy than the method followed today. The second problem, having felt a definite lump in the breast with no other sign except a lump, how we can decide whether the lump is benign and to be simply removed, or how shall we recognize it as malignant and requiring a complete operation for cancer?

Thirty years ago in the great majority of cases every individual coming under our observation had a definite lump and in fully ninety per cent of cases the lump was malignant, so we rarely had our ability to recognize the benign and malignant lump tested at the exploratory incision. It would be unfair for me not to give credit to Halsted and his group, Fenger and Senn of Chicago, and Warren of Boston, whom I knew personally. At least those four men and others in this country and abroad had an ability which few surpass today, the ability to recognize with the naked eye the lump that should be removed only, and the malignant tumor for which complete operation should be done. In my own practice today in over half the cases operated on it must be decided at the exploratory incision whether they are benign or malignant.

In the examination of the first problem we must reverse the usual order of affairs. No one who wishes to become expert in differentiating tumors in the breast, or in deciding whether or not a tumor exists must have any suggestion or any knowledge of the history concerning which breast is involved before the examination is made.

Then you are confronted with two types of evidence on which you must base your conclusion. One is the evidence of the history. The patient has a discharge of blood from the nipple. Your examination is negative. She knows she has had a discharge of blood from the nipple, and perhaps you can confirm it by expressing blood. So that when you are all through with this investigation you only have one positive finding, a discharge of blood from the nipple. What shall you do? There is a great difference of opinion among surgeons in this country. The majority will tell you that that means a precancerous lesion buried in the breast and that you should remove the breast. None of these authorities have ever presented written evidence from which they have made that conclusion. As far as I can make out it rests upon fear and not upon fact. So far only two surgeons, until recently, have made such a report, Dean Lewis and myself, and our conclusions from our evidence of over 25 years is that a discharge of blood from the nipple is not a sign of cancer; that a woman with a discharge of blood from the nipple runs no more risk of cancer than any other woman. Therefore, those of you who see that can be guided either by the minority who have presented their evidence, or by the majority who have not.

Then there is the patient who complains of pain. There is nothing else but pain. You find nothing; she has had it for some time; the pain is of any character. What does that mean? As far as my investigation goes it means nothing. A woman with a painful breast runs no more risk of cancer than a woman with a painless breast. If that pain brings her under the supervision of a medical adviser it is an advantage in that she will receive definite instructions for her protection. That illustrates then the conclusion based upon histological data only. More I shall not go into.

Next comes what you feel with your hand or both hands by any method of palpation. Naturally when surgeons palpate tumors of long duration which had assumed characters, on one hand undoubtedly malignant, and on the other undoubtedly benign, they did not realize how little palpation came in. It was chiefly inspection. Here was a lump in the breast with an ulcer or retracted nipple or adherent skin. Why do you need palpation? And many of them did not take that opportunity to develop their sense of palpation. But now that we have found this help we find that we must from our sense of touch only first distinguish whether the woman has a lump or not, because many breasts are lumpy. Whether that is one lump you feel, or whether there are other lumps is a matter of importance.

Having decided, then, that there is a disthere must be an exploration. It does not make any difference how you make the diagnosis, whether you cut into the lump and look at it and make a frozen section, or whether you cut out the lump and look at it and make a frozen section, provided you come at the time of operation to a definite conclusion. Now this is a very important thing for all of you to know and for the public to know, that those who have had the greatest eperience as surgeons or pathologists find that they can divide their lumps into three great groups.

One they know is benign and they remove the lump. One they know is cancer and they immediately proceed to the operation for cancer. And the middle group they do not know, and they may not know yet and it may be ten years since the operation. The working rule must be when in doubt do the complete operation for cancer.

Now there is inspection. Look at the nipples. Look at the size of the areola. Look for bulging in the axilla. We are beginning to find very frequently things that we never noticed before, that lactation leaves its effect upon the breast in wrinkles, in dimples. If you do not realize it, you think that it was a sign of cancer. I cannot go into all of the things that have come out even in the last year, showing how our field of vision has increased, because in the beginning the moment we looked at the breast there was cancer. Why look further? Today the moment we look at the breast nothing is there and we keep looking and suddenly there comes into the field of consciousness things for interpretation we never saw before. For example, what does a visible small tumor mean? If a small tumor is visible in a moderately normal breast that almost always means malignancy, a thing we never knew before. Wrinkling, evidence of recent lactation, would mean nothing, while in older women it would mean something. Remember that when you first inspect the breast both nipples may be pulled in, or only one nipple may be pulled in, and you naturally conclude that is a retracted nipple. The pulling out of the other nipple may have occurred a moment before from the nurse striking the nipple, or the clothes striking the nipple. After your examination you are surprised to find that the nipple you saw retracted is just as elevated as the other one.

Then comes palpation. I never knew until the last four or five years that women had so many lumps in their breast that were not lumps. The average breast is lumpy. It is most lumpy at puberty. It is very lumpy at pregnancy. Here is an attempt to bring out whether the palpable tumor bulges, or whether over the bulging there is dimpling. If you can press forward a small tumor and there is no dimpling, it may be benign or malignant. If there is dimpling, the chances of malignancy are so great you are justified in doing the complete operation for cancer.

Next we explore. I will give you my method of exploration. I do not cut out the tumor; I cut down upon it. It is the same method as originally employed by Halsted. Now, in the first place, no surgeon should operate if he cannot recognize a blue dome cyst. That is the beginning; he must learn that.

The blue dome cyst is as distinct as an orange is from a banana. The dome may be found the moment you cut through the fat, or, in some instances, a zone of breast. You open the cyst; it has a clear or cloudy fluid; it has a smooth wall; it never contains blood or grumous material. In such cases you are justified in removing the cyst only, even if in cutting out that cyst you find other cysts and dilated ducts; don't remove the breast. There are millions of women in this world who have cysts and dilated ducts in their breasts who are without cancer of the breast.

The other case is encapsulated tumor. If you can distinguish an encapsulated tumor, that of itself is a sign of non-malignancy. These groups should be distinguished to save women from mutilation.

Here we have a woman past the menopause; shows retracted nipple, dimples in three places; that in itself is enough to justify the complete operation for cancer without exploration.

The only new problem in this group, when you know from examination that the lump is cancer, is whether you should give x-ray or radium before the operation. That problem is yet in its experimental stage. Now, when you cut down upon a palpable lump in the breast and do not quickly find it, and you cut through the fat and you see nothing, and you cut into the breast tissue and you see nothing, all this is suggestive of malignancy.

The malignant tumor consists of a zone of cancer but is not the zone that you palpate; you palpate the larger zone of the breast surrounding the one of cancer. The density is affected by the infiltration of cancer along the connective tissues. And that is why cancer of the breast you see at operation is always smaller in diameter than the area you feel, and the expert surgeon will recognize cancer, long before he gets to the cancer, by striking this infiltrated breast. This is a breast I believe the majority of operators to day have no difficulty in recognizing.

The next group are solid tumors that are not encapsulated. That is the group in which all of you should do the complete operation for cancer until you have learned to recognize it. At the present time, in the majority of clinics with the most expert surgeons and pathologists this group is treated as cancer and explains a larger per cent of five-year cures of cancer than is true.

Here is a non-encapsulated adenoma that looks like a cancer that is not a cancer. Many surgeons, cutting out a benign lump in the breast, know it is adenoma, or know it is blue dome cyst. They remove the breast because, in cutting out the benign lump they have encountered other cysts, as you see here, or dilated ducts, and they say it was to protect the patients from cancer, or to protect them from further trouble of that breast. That is based upon fear and not upon fact. This woman had multiple tumors in both breasts. One breast was removed. We found it was not cancer some 25 years ago. We told her it was not cancer. We advised her to have the removal of the other breast to protect her from cancer, and she said she would wait until it was cancer. She is still waiting and there are no lumps in the breast. The finding of multiple cysts or dilated ducts in cutting out a breast tumor that is benign is not an indication for the complete removal of the breast. There have been very few contributions agreeing with my standpoint, and not until the last meeting of the surgical association did the majority of my colleagues in surgery agree with that position, and only recently Dr. Peck of New York, a surgeon of great judgment, reports his cases with evidence agreeing with that statement.

In this case the inspection shows a unilateral hypertrophy, and palpation a fluctuating tumor, but the historical facts are more helpful than any other. She is under twenty when we never see a cancer. The lump was felt in pregnancy. It was operated upon in that patient, and yet 25 years ago we would have removed that whole breast. The point I want to illustrate is that removal of such a breast is illogical. It is not a sufficient operation for cancer, and it is too much for a benign lesion.

DISCUSSION

Dr. L. P. McCalla, of Boise: Diagnosis is made in half the cases at the time of operation and a surgeon is not competent to do that kind of work unless he can, by an incision into the mass, make a correct diagnosis. If we feel we are not prepared to operate on breast tumors with this knowledge, I think it is just to the patient that we do not operate. An incomplete operation is worse than no operation. Now, I have no patience at all with those surgeons who say they never remove the pectoralis major, and particularly never remove the pectoralis minor, because of the great mutilating effect. I know of a large number of cases where I would not have done a thorough operation had I not removed both pectoral muscles. I have no patience with that idea of mutilation being of such a serious consequence in a known case of carcinoma of the breast.

Thoroughness of your preparation and ability to doo r make a correct diagnosis are essential. Be prepared, as an abdominal surgeon should always be prepared to meet any emergency when he opens the abdomen. And after the diagnosis is made, if there is even a reasonable suspicion of cancer, I do not think we are justified in doing anything except the Halsted operation. By doing that we give a long lease on life to many women and to a great many a complete cure, where any other method of procedure would be absolutely worse than nothing at all.

Dr. E. I. Bartlett, of San Francisco: In multiple mysts of breast and removing a part of the breast, including a large cyst and leaving other cysts in the breast, I have difficulty in agreeing with Dr. Bloodgood in all cases. I feel that the presence of cysts or any kind of lumps in the breast is a great menace to the patient from a mental standpoint if nothing else. The doctor is very modest about the exploratory operation. He simply states that he cuts down directly upon the tumor. I think he should be more emphatic in insisting that that is the only proper way of exploring.
malignant tumor that is a malignant papilloma.

There seems to be a terrible fear on the part of surgeons that they will do an incomplete operation in the presence of cancer, and that it is much better to slaughter breasts in a wholesale way than to leave a cancer, or do the incomplete operation. I have seen some cases in which it was perfectly easy to recognize a localized hypertrophy and have advised the surgeons not to operate. But the family physician brings great pressure upon the surgeon and invariably the surgeon operates and he discovers that operation was not necessary.

I would like to leave this word: in cases where the family physician brings pressure and you feel that you must operate in spite of your feeling that it is not cancer, or not a tumor, that it is hypertrophy, do the best you can to do as little damage as possible of the breast. Remove a blunt wedge-shaped piece of the breast. If a square piece is taken out, or a ragged shaped piece is taken out, and the breast is sutured, you are going to cut across some ducts, and when the breast lactates or when the menopause comes on the patient is going to have some trouble with pain in the breast and localized swellings.

Dr. Magill: Concering papilloma of the type that Dr. Bartlett mentioned, I diagnosed a case as carcinoma and insisted upon the radical operation. Dr. Bloodgood pointed out to me while that type of tumor is often enough a papilloma, although it looks like a cancer, it is a tumor that will not recur, and my patient is alive and well, and I know now had an unecessary removal.

Last year I had one doctor bring me a piece of tissue and I went to a good bit of effort in explaining to him not to expect me to diagnose cancer but that he should diagnose cancer in time to save his patient. The very next week he sent me another piece of tissue from his mother's breast, and it was just as markedly cancerous as was the first piece, showing that the surgeon must be able to make the diagnosis either himself, or in his own laboratory.

In breasts with large cysts we practically never see cancerous areas. In one case the breast was gone over very carefully and we could find no evidence of cancer in the breast, although it was a definite case of chronic cystomiasis, with small cysts. The radical operation was not done. Very much to my embarrassment the patient came back with definite metastisis less than a month ago. I suppose we all have to come to the conclusion in this type of tumor where we have cystomiasis with small cysts that the breast should always be removed, but should the radical operation be done is the question.

Dr. Bloodgood: In regard to the chronic cystomaisis with the small cysts, and in the cases called simple hypertrophy. It is neither hypertrophy nor simple. The reason I did not go into the details of chronic cystomiasis is because it is in print. It belongs to a group in which I advise you to do the complete operation for cancer, although it is a clinical group.

Remember what I have tried to bring before you tonight: first, a method of examination. How to exclude the case which you will not operate on. Second, what to do when you explore a definite lump. When you explore a definite lump I believe every surgeon capable of operating in this country should be able to recognize the blue dome cyst and the encapulated adenoma, and should be able to recognize those two anyway. All the others treat as cancerous.

Remember when you explore a tumor of the breast, with ordinary training you should be able to recognize that group, and you will be surprised how few you will mutilate unnecessarily, because non-encapsultated areas in cancer are relatively small. The group that are not cancer, that are not encapsulated, that are not blue dome will increase. I am afraid to go any further, for I am nesitant about getting into these more difficult problems that I would like to discuss.

SOME PROBLEMS INVOLVED IN THE LYON-MELTZER METHOD OF BILIARY DRAINAGE

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For the diagnosis and treatment of disorders of the gall bladder—bile duct—system a method has recently been brought into use by Lyon and his followers. This method has been widely adopted and is known as the Lyon-Melzer method of non-surgical biliary drainage. Any method which tends to make more precise the diagnosis of diseases of the upper right quadrant and, by a simple method of treatment curtail operative interference, merits investigation. In the evaluation of any new method thoughtless enthusiasm is fully as harmful to progress as is ill-advised and prejudicial criticism. I shall discuss briefly some of the physiological problems involved in the method, weigh the evidence as brought forward by the observations of others, present some personal experiences and studies, and finally try to formulate some tentative conclusions.

HISTORY

In 1917 Meltzer[1] stated that by the local application of a 25 per cent solution of magnesium sulphate solution, the intestinal wall was completely relaxed. He reasoned if the musculature of the duodenum and sphincter of Oddi be thus relaxed, the ejection of bile should follow. Although he never observed or assumed (a personal letter to Dr. Lyon, N.Y. Med. Jour. 115, pp. 457) contractions of the gall-bladder, he advanced the idea that the gall-bladder might be made to empty itself by the application of a magnesium sulphate solution to the duodenal mucosa, and suggested in a foot-note clinical possibilities for the method. Lyon made extensive application of the magnesium sulphate method to the study and treatment of gall-bladder disease and has reported his views and observations in numerous publications[2-8]. He introduced Meltzer's "law of contrary innervation" into the matter and assumed that if the duodenal musculature and sphincter of Oddi were relaxed, the gall-bladder *ipso facto* should contract. After the injection of a concentrated magnesium sulphate solution into the duodenum Lyon observed a more or less constant variation in the color and consistency of bile flow, and that somewhere in the course of the bile flow thus obtained there appeared a more darkly-colored and thicker bile. Reasoning by analogy he assumed that the darker bile must be gall-bladder bile, because at operation and at autopsy the bile obtained from the gall-bladder is commonly dark and thick. On the postulate that the more highly pigmented fraction is gall-bladder bile, rests the Lyon hypothesis of bile segregation, namely: Under the influence of a concentrated solution of magnesium sulphate solution placed in the duodenum, a sequential flow of bile is obtained; first, a pale yellow bile (A bile), which the hypothesis assumes comes largely from the common duct; second, a darker, more viscid flow (B bile), of which Lyon says: "It is my personal belief (Lyon[6] elaborates five grounds for his belief) that it is coming from the gall-bladder wholly, or in part, but mixed, probably, with a few milli-litres of bile still delivered from the ducts, or bile freshly secreted by the liver"; third, a clear yellow bile of low specific gravity (C bile), assumed to be freshly secreted liver bile. On this hypothetical differentiation of bile flow into duct, gall-bladder and liver bile, Lyon and his followers have elaborated a scheme for the diagnosis and treatment of gall-bladder disease, by which variations in color, quantity and consistency, in cytology and in bacterial and crystalline content have been translated into terms of morbid physiology. It is obvious that the validity of the Lyon method of biliary diagnosis and therapy depends largely on fixing the gall-bladder as the source of the dark or B fractions. In order to avoid confusion we shall consider only the bile flows obtained by magnesium sulphate. We shall also limit our discussion largely to variations in pigment values because the only constant entering into the Lyon differentiation of the source of bile flow is the variations in pigment content.

THE TECHNIQUE

The technique of obtaining bile samples for study varies somewhat with the different observers, though chiefly in the methods used to prevent bacterial contamination. Elaborate methods have been devised to prevent contamination by cleansing of the mouth and by lavage of the stomach and duodenum with antiseptic solutions, such as 1 to 10,000 postassium permanganate. Obviously, bacterial studies which depend for their reliability on methods of sterilization of a field such as that through which the duodenal bucket passes must be open to question. To obtain samples the duodenal tube is swallowed in the usual manner; sips of water and the lying of the patient on the right side often facilitate the passing of the tube from the stomach into the duodenum. Samples are aspirated at frequent intervals and tested for acidity with litmus. When the reaction changes from acid with litmus. it is assumed that the bucket has passed into the duodenum. After a satisfactory sample of the duodenal contents is obtained, 50 to 100 cc. of 30 per cent magnesium sulphate is introduced into the duodenum through the tube, allowed to remain a few moments, siphoned off, and the bile collected in appropriate fractions for study.

It was stated by Meltzer that if the magnesium sulphate were passed over the gastric mucosa it lost its power to relax the duodenum. It was difficult to conceive what alteration might take place in a simple magnesium sulphate solution in its passage over the gastric mucosa that would prevent it from having the same effect on the duodenum and biliary apparatus as when introduced directly into the duodenum by tube. We learned early in our work that it was not necessary that the magnesium sulphate solution be placed directly in the duodenum thru the tube, as universally advocated, in order to provoke the A-B-C sequence of bile flow. In over fifty instances we have obtained typical A-B-C sequences by the following method: The bucket was introduced into the duodenum in the usual manner; the patient then swallowed 75 to 100 cc. of 30 per cent magnesium sulphates solution; after a brief time the bile flow usually occurred in the same manner as if the magnesium sulphate had been introduced directly into the duodenum by tube. Obviously, this technique is imperfect, especially if one desires samples for study, because the bucket often slips back into the stomach when the "salts" are swallowed, and the frequent admixture of stomach contents with the first fractions makes them unsuitable for study. However, the quantity and quality of bile flow in all fractions averaged about the same with the mouth method of introducing the magnesium sulphate as with the tube method. In fact, the largest flow of black bile we have seen (285 cc.) was produced by the mouth method. The manifest bearing of this observation on therapy will be emphasized later.

THE MECHANISM

The system affected by the magnesium sulphate experiment consists of the gastro-intestinal tube, whose mucosa is brought into immediate contact with the solution, the neuro-muscular mechanism of the duodenum, the sphincter of Oddi, the gall-bladder and bile ducts, and the liver which may react qualitatively and quantitatively to the presence of magnesium or magnesium sulphate in the portal stream. The duodenum receives motor fibres from the vagus or para-sympathetic and inhibitory fibres from the sympathetic through the splanchnics. Current opinion has it that the gall-bladder receives both motor and inhibitory fibres by the way of the splanchnic nerves. "The motor fibres emerge from the spinal cord in the roots of the sixth thoracic to the first lumbar nerve; motor fibres may occur also in the vagus."[9] It is assumed that the normal reflex occurs when food enters the duodenum, the afferent path for which is the vagus, the efferent, the splanchnics. As far as we have been able to ascertain it is not known in just what manner the expulsion of gall-bladder contents is accomplished, because convincing experimental work on the motor functions of the gall-bladder is lacking. The current conception of the physiology of gall-bladder contraction dates from the work of Doyon, whose views were based on his interpretation of manometric tracings. Bainbridge and Dale[10] showed that what Doyon assumed to be contractions of the gall-bladder were, in reality, pressure effects due to volume changes in the liver, and that these "contractions" failed to appear in the tracings when the contact with the liver and adjacent viscera was minimized. Neither Doyon nor Bainbridge and Dale, who of all observers have probably studied the problem of gall-bladder motor function most deeply, ever saw gall-bladder contractions. Crohn[11], et el., injected methylene blue into the gall-bladder in order to differentiate gall-bladder bile from liver and duct bile. They found that strong faradic stimulation of the peripheral end of the vagus caused contractions of the diaphragm, stomach and intestine, but without visible contractions of the gall-bladder, although a flow of blue stained bile was noted. The expulsion of some of the gall-bladder contents thus obtained may be as well explained by the pressure of the liver and adjacent viscera on the gall-bladder in accordance with observations of Bainbridge and Dale. Crohn believes that the gall-bladder is an inactive organ, and has little to do in the production, storage and expulsion of bile, although Rous and McMaster[12] have brought forward experimental evidence to show that the gall-bladder acts as a cencentrator of bile.

A physiological sphincter-like accumulation of circular fibres at the terminal end of the common duct—the sphincter of Oddi—is generally admitted. Crohn, et al., have shown that these fibres contract to direct faradic stimulation, causing the papilla of Vater to protrude into the duodenum. Herring and Simpson[13] showed in a series of different animals, including the monkey, that the sphincter resisted a pressure of 200-300 mm. of water. McWhorter[14] demonstrated 50 to 100 mm. lowering of water pressure in the common bile duct of dogs after magnesium sulphate solution had been applied to the ampulla, although no such results were obtained by the application of peptone. Although there is credable evidence for the existence of a physiologic sphincter of Oddi, which, along with the duodenal musculature, may be relaxed by the application of magnesium sulphate, there is no experimental evidence to show that the gall-bladder has ever been induced to expel its contents by this means. Crohn and Auster applied concentrated magnesium sulphate to the duodenum of eight dogs, into whose gall-bladders methylene blue had been injected. Although bile flow was obtained, no amount of magnesium sulphate or other agents ever caused expulsion of the blue-stained gall bladder contents. Sachs[15] only has seen a visible reaction of the gall-bladder to any stimulation. He introduced a magnesium sulphate solution into the doudenum of a patient while one the operating table. The gall-bladder *collapsed,* B bile was obtained, but no contractions were seen. May not this "collapse" have been again an effect of the ever-changing volume of the liver as observed by Bainbridge and Dale, or a disturbance in the pressure relationships of adjacent viscera?

It is clear from a brief survey of the pertinent physiological literature that there is no conclusive evidence that the gall-bladder can be made to contract or expel its contents, either by nerve stimulation, or by the stimulation of the duodenal mucosa with magnesium sulphate. In view of the complete lack of convincing experimental evidence that the gall-bladder discharges its contents when magnesium sulphate is applied to the duodenum, one naturally turns to the liver as a possible source of the more deeply pigmented B bile. Obviously, study of the bile flows obtained by the magnesium sulphate method after cholecystectomy should be instructive. We have studied six cases from whom the gall-bladder had been removed (one case had neither gall-bladder nor common duct), and three cases with complete obstruction of the cystic duct and an impacted gall-bladder; typical A-B-C sequences were obtained in five of the six cholecystectomized cases and in two cases with impacted cystic duct stones.

Case 1. H. D., male, 56 years old, had had his gall-bladder removed one year prior to the drainage. The following table shows the result of a biliary drainage in which the magnesium sulphate was given by mouth.

TABLE I.

Sample No.	Time	Amt.	Reaction	Sp. Gr.	Color	Clarity	Cholestrol Percent
1		20 cc	A		dark yellow	turbid	0.050
2		15 cc	A		dark yellow	clear	0.100
3		28 cc	Alk	1013	dark yellow	clear	0.360
4		13 cc	Alk		brown	clear	0.165
65 cc of 30 per cent MgSO given by tube.							
5	10 min.	27 cc	Alk		light yellow	clear	0.037
6	25 min.	35 cc.	Alk	1034	light brown	clear	0.062
7	45 min.	60 cc	Alk	1018	light brown	clear	0.032
8	60 min.	40 cc	Alk	1018	dark brown	clear	0.250
9	85 min.	53 cc.	Alk	1014	very dk. br	clear	0.330
10	120 min.	18 cc	Alk		light yellow	clear	trace

This experiment shows that a typical A-B-C sequence can be obtained in an individual who has no gall-bladder by the injection of a concentrated solution of magnesium sulphate into the duodenum. It is to be noted that a flow of 13 cc dark brown bile was obtained before the introduction of the magnesium sulphate, showing that the pigment values vary without duodenal stimulation. The cholestrol curve followed the pigment curve rather closely in this case, which is of interest because it has been argued that a high cholestrol content differentiates the B or assumed gall-bladder fraction.

TABLE II.

Sample No.	Amt.	Reaction	Sp. Gr.	Color	Clarity
1	68 cc	Acid	1004	lt yellow	Turbid
Was given by mouth 4034 cc. Alk 1030 lt. yellow (C) clear.					
2	70 cc	Alk	1050	lt yellow (A)	clear
3	52 cc	Alk	1040	dk brown (B)	clear
75c cc of 30 per cent magnesium sulphate was given per month					

Case 2. Mrs. B. S., age 45. Table II. gives the results of a biliary drainage one day before operation. The contents of the contracted gall-bladder consisted entirely of stones, with a few cc of gelatinous, faintly bile-stained mucus. The cystic duct was permanently occluded. In this case it was impossible to conceive of the pigmented or B fraction as representing gall-bladder bile, or as being affected in any way by the discharge of gall-bladder contents.

Case 3. Mrs. F. E. S., age 31, afforded us an exceptional opportunity to study, in a case without gall-bladder and common duct, the effect of concentrated solutions of magnesium sulphate on bile flow. A succession of operative procedures had given us a case for study in which the gall-bladder had been removed and the common duct destroyed, and in whom a functioning hepato-duodenostomy existed. The hepatic duct had been implanted into the duodenum, which had been sutured to Glisson's capsule in a manner to form a basin into which the liver poured its secretion. A feeding catheter lead through a fistulous tract to this basin. In order to ascertain the effect of a concentrated magnesium sulphate solution on a biliary system without gall-bladder or common duct, and without a sphincter of Oddi to be relaxed, numerous experiments were performed, which are reported in detail elsewhere[16]. Typical A-B-C sequences were obtained by injecting magnesium sulphate solution into the duodenum and well into the jejunum beyond the point of likely regurgitation of magnesium sulphate into the duodenum. It was clearly shown by the injection of the magnesium sulphate solution 32 cm into the jejunum that the bile pigment curves in this case followed closely the curves of the gram-molecular concentration of magnesium in the bile flow, and that the variation in pigment concentration in this case was probably in some way dependent on the presence of the magnesium ion in the portal blood.

Case 4. Mrs. P. K. Age 52, consulted us for typical "gall stone attacks" March 7, 1921. Operative intervention was advised, but she elected "non-surgical biliary drainage" treatment. She was given six "drainages"; bile salts and Carlsbad were administered also. After a remission of about six months the attacks recurred with increasing severity, and were not benefited by biliary drainages or other therapy. The day before the operation a typical A-B-C sequence with dark brown "B" bile was obtained, the B bile containing considerable numbers of cholesterin crystals and an occasional cell. At operation a large, thick distended gall-bladder was found, whose contents could not be expressed. The gall-bladder with part of the cystic duct was removed, without losing any of its contents. A ball valve stone was found firmly wedged into the cystic duct where it had evidently been lodged for some time. The contents of the gall-bladder was a thin, blood-stained fluid. The filtrate of this fluid gave the barest bile pigment reaction to the nitric acid test. Bile, comparable to the B bile obtained the day before, was vomited a few moments after the patient came from the operating table. This vomited bile contained a considerable number of cholesterin crystals, while the gall bladder contents had none.

It is inconceivable that the "B" bile flow obtained in this case the day prior to operation could have been in any way affected by the contents of the gall-bladder. Such cases have convinced us of the fallibility of interpretations resting on the assumption that "B" bile is derived "wholly or in part from the gall-bladder."

Numerous phenomena encountered in experimenting with the magnesium sulphate method tend to invalidate clinical and therapeutic inferences based on the assumption that B bile is necessarily of gall-bladder origin and that abnormalities found in this bile are attributable to gall-bladder disease alone, viz.:

1. The quantities of B bile obtained are occasionally far in excess of gall-bladder capacity —285 cc in one of our cases. Advocates of the method explain this objection by arguing that the gall-bladder puts out deeply pigmented bile, which is diluted by the liver flow, thus accounting for the quantity of B bile obtained.

2. The change of color is gradual, not abrupt as it should be were a hollow viscus expelling its contents. A number of these contradictory phenomena have been set forth by Einhorn[17].

3. Sequential flows of B bile may be obtained by repeating the magnesium sulphate instillations at the same sitting. We have obtained as many as three sequential flows of B bile by this method. Partial emptying of the gall-bladder is invoked to account for this phenomenon.

4. B bile can be obtained from cholecystectomized patients with disconcerting frequency. Dilated ducts and cholangeitis have been assumed as the explanation.

5. B bile can be obtained in cases where gall-bladders cannot be emptied at operation.

It is apparent that there are not satisfactory experimental grounds for the generally accepted view that magnesium sulphate has the power to empty the gall-bladder, and adequately controlled clinical experiments go far toward invalidating the gall-bladder as the necessary source of B bile. Of clinical evidence interpreted in the light of favored theory there is much. The variation in color, "consistency," bacterial cellular and crystallin content can be as easily explained by regarding the liver as the source of the dark bile as by assuming that it is a gall-bladder product. Carefully controlled clinical and laboratory investigations are necessary to settle the question.

When we approach the problem of the alleged results of treatment we are riding the high seas in a fog and without a compass. When one has watched the flow and ebb of many therapeutic tides, convincing laboratory proof and rigidly controlled therapeutic experiments are necessary for the establishment of a method of treatment. It was a time-honored custom for our forbears to administer magnesium sulphate for biliousness and for all disturbances in the upper right quadrant. Since Wenzel Beyer insisted four centuries ago that the waters rfom the Karlsbad Spring were not only good to bathe in but should be drunk, the reputation of Karlsbad for liver and gall-bladder diseases has rested on change of environment, psychology, recreation and magnesium sulphate. The one outstanding fact established by non-surgical biliary drainage is that in some manner an increased output of bile and usually of bile pigment also, can be produced by magnesium sulphate. Our work has shown that it makes little difference in bile flow whether the magnesium sulphate is introduced by the more remunerative and less pleasant method of the duodenal tube, or is simply swallowed as a "dose of salts." It is argued, however, thatt he direct removal of this bile, thus preventing reabsorption, is advantageous and justifies the time, discomfort and expense relevant to the procedure. The important bile products that may possibly be reabsorbed are pigment, bile salts, bacteria and deleterious split-proteins.

The assumption of an entero-hepatic circulation of bile pigment is based on the experiments of Wertheimer[18], who showed that when sheep's bile, which can be identified, *is injected into the circulation of dogs,* it can be recovered in the bile. There has been no direct evidence offered that bile pigment is ever absorbed from the intestine. Hooper and Whipple[19] fed large quantities of bile, both from dags and other animals, to dogs, and in a large number of most carfully controlled experiments could not obtain the slightest indication of *absorption* of bile pigment from the intestinal tract. Whipple[20] states that "there is not a shred of evidence, clinical or experimental, that stercobilin is ever absorbed from the intestine." Furthermore, bile pigment is the end product of pigment metabolism, and to postulate the reabsorption of a metabolic end-product in any but trivial amounts is unphysiological. The absorption of bile salts has been proven. Their importance in the digestion and absorption of fats is well known. They are proven cholagogues and it is obvious from a physiological standpoint that their removal in biliary disease by aspirating the bile would be much more likely to react disadvantageously rather than usefully to the patient. Any value accruing from the immediate removal of the bacterial content of the bile from the body is problematical when one remembers that the lumen of the intestine is in fact the outside world, that it is a cesspool of bacteria, that it daily takes care of much greater masses of potentially pathogenic microorganisms than would be dumped into it by a discharge of infected bile from the liver and the bile passages. Of biliary protein split-products we can say nothing. Any attempt to invoke them as a factor at the present time is phantasy and without basis in fact.

COMMENT

Enough questions have already been raised to convince us that it is possibly unwise to broadcast at this time the clinical and therapeutic application of the principles laid down by Lyon and his followers. If B bile can be shown to come at times from the liver it throws the burden of proof on the advocates of the gall-bladder source of this fraction. The typical A-B-C sequences obtained in our case without gall-bladder or common duct, by placing the magnesium sulphate well into the jejunum, and in cholecystectomized patients suggests an interpretation of the magnesium sulphate experiment different from the one generally accepted. It is quite probable that the brilliant diagnoses attributed to this method have been largely worked but subconsciously in the minds of its advocates from a rich clinical experience antedating their interest in the matter. A clinician is too likely to consciously belittle clinical history, physical findings and long experience when all excited about some method that smacks of laboratory precision. Methods of treatment should be tried and evaluated, not advocated, and a most rigorous critique is desirable before their admission to the fold of approved therapeutic procedures. Study of the morbid physiology of the liver through its bile flow, and of the reaction of the liver to substances introduced into the intestinal tract or into the circulation, will undoubtedly do much to clarify our knowledge of liver disease and to develop conceptions applicable to diagnosis and treatment. Graham has shown that a greater or less degree of hepatitis is present in all gall-bladder cases coming to operation. The unsatisfactory results obtained in certain cases operated for gall-bladder disease are explained by the failure of the liver condition to right itself unaided after the diseased gall-bladder has been removed. The efficiency of a Karlsbad cure, so often advised after operations in Europe, may have a basis in physiological fact. We may look for far-reaching developments from carefully controlled studies of liver function, and it is greatly to the credit of Lyon to have established an easy, effective method of obtaining bile. A great step in advance has been taken when we are able to obtain the secretions of an organ for study. If the Lyon-Meltzer method continues to stimulate research in biliary function and its disturbances by the study of bile flow, it will have amply justified itself. The perspective, however, should not be so fixed that the gall-bladder hides the liver.

CONCLUSIONS

1. Segregation of bile into duct, gall-bladder and liver bile, by the magnesium sulphate method, in the strict sense assumed by Lyon, is still awaiting proof.

2. The dark, or B bile, which has been generally assumed to be gall-bladder bile, may be, at least in part, a result of the reaction of the liver to the presence of magnesium sulphate (possibly the magnesium ion alone) in the portal blood, producing a bile rich in pigment.

3. Magnesium sulphate in the human ends to produce an increased bile flow; whether the magnesium sulphate is placed in the duodenum by tube or swallowed is immaterial.

4. Investigation of abnormalities of bile flow in the light of disturbed liver function, in full realization that gall-bladder disease may profoundly derange the entire biliary system is suggested.

5. The broadcasting of non-surgical biliary drainage as an accredited therapeutic measure has been premature.

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DISCUSSION

Dr. Leo Ricen, of Portland: The subject of biliary drainage is comparatively new and it is natural that a difference of opinion should be expected. Personally I believe that Lyon has given us something of real value. I want to make a remark with regard to the experiments made by Dr. Dunn on a patient who had his gall bladder removed. and the magnesium sulphate was injected into the jejunum with the result of obtaining A B and C bile. We cannot draw any conclusions on a patients who has a gallbladder from experiments made on a patient without a gall bladder.

I will admit for the sake of argument that the B color has no significance, but we can always get the bile, and if we find bile that is infected we have something very valuable, and that is really the most important thing for all practical purposes. It is immaterial whether it comes from the hepatic duct or the common duct. As soon as there is an infection of the common duct we can safely conclude there is an infection already in the gall bladder.

I will admit that magnesium sulphate taken by the mouth may produce certain consequences. That is perfectly correct. But we have a more exact method, that of putting the duodenal tube into the duedenum. The conclusions I have arrived at are that no patient who undergoes an operation for the removal of the gall bladder or surgical drainage of the gall bladder should be should be allowed to leave the hospital unless repeated drainages show that the bile is not infected, because they do come back with trouble.

We have found a condition at operation where the muscle is relaxed and there is a constant dribbling of bile into the duedenum. In the course of time you will have a dilatation of the hepatic and common duct. If the infection is still there you have all the favorable elements for the forming of stones again. That is the time this patient will show dark B. bile. The absence of the B. bile usually shows an obstruction in the cystic duct no matter what it may be, an adhesion or a salculus, or the pressure on the glands from the outside. We have verified that time and time again on the operating table.

Dr. Dunn: First in regard to cases that have re-acted satisfactorily to treatment with this method, it is difficult to evaluate clinical evidence of a therapeutic method where we have not a clean-cut, carefully controlled experiment. I realize that it is hard to take the field against a method. It is always easier to boost than it is to do the other thing. But I feel that I have worked to find out with an unprejudiced mind what this method would do and to bring up the other side of the thing was necessary; and perhaps some good, or a great deal of good may come out of the investigation.

DIAGNOSIS OF DISORDERS OF THE DUCTLESS GLANDS

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Knowing that this audience has already been surfeited with medical knowledge by the wonderful talent that has been on the program for the past two days is going to force me to be rather concise in the demonstration that will follow. I do want to make a few general remarks in a preliminary way regarding the status of the study of internal secretion. As you all know it was but a few years ago that there was a recognized clinical standing in internal secretions, and in fact today there is a very wide difference of opinion regarding the real value and the place that internal secretions hold in general medicine.

We have some men in the profession, probably a majority, who feel that these studies have really been of little consequence and have very little standing. And this is not limited to the general profession, but obtains very much in some of the large medical centers and the large universities, particularly in all the ductless gland diseases, with the exception of the thyroid. On the other hand, there is unquestionably an enthusiastic wave passing over this country that is carrying us entirely too far to the other side.

There are certain enthusiasts in certain localities who are trying to account for all the things they cannot account for on other basis by disorders of the internal secretions. It has been the purpose of the Association of Internal Secretions to attempt to study this knowledge, and a wonderful lot of information was obtained in various ways, really making it worth while and giving it this absolute actual standing that it should have. And this association for the study of internal secretions, as you know formed four or five years ago, has had for its leaders such men as Cushing, Cannon, Parker and others.

It has in its membership men who are aligned with all the specialists and the leaders in medicine, both clinical and research, for the purpose of really finding out what there is about the internal secretions, and I want to recommend it to the medical profession as a whole, because in these meetings we find that we get the very best thought and advanced research upon the ductless glands. We have the physiologists, the histologists, the pharmacologists, and the specialists in various lines contending for their own viewpoints, and it is the check that these men have upon each other that is really making the advance that is placing the internal secretions upon a firm stable basis.

We have been hearing in the past week wonderful statistics about the prevalence of cancer, the prevalence of tuberculosis, the prevalence and the extent of brain tumors, and so on and so forth. And we do not know today the prevalence of diseases of the internal secretions because we are just beginning to find out how to diagnose them.

One cannot quote, as I say, absolute statistics, but I can tell you very frankly and honestly that in our own private practice and experience we have found that we have more disorders of the ductless gland system to deal with than we have disorders or diseases or lesions of any other one system. More disorders of the ductless glands than we have, for instance, lesions of the respiratory tract, of the gastrointestinal tract, or of any other one tract, and I am sure you will agree with me, because of this experience that has been repeated so frequently, that as soon as diagnosis becomes at all understood many cases are found in ordinary practice that the physicians have been taking care of for years.

The next point is this. The diagnosis of these disorders is supposedly very difficult. Now, that is a mistake. I can assure you that you can prove this to your own satisfaction, that these diseases are more easily diagnosed than diseases of any other system, and the only palpable reason we are not able to diagnose them now is because we have not been trained to diagnose them in our medical schools and in our medical education.

The signs and symptoms of these disorders are on the surface. They are objective to a large extent. They are what I call physiological signs. The physiology is on the surface, as I will attempt to show you by a series of classical cases. And the diagnosis in the classical cases is easier and simpler than the diagnosis of a heart disease or a respiratory disease, or any gastro-intestinal disease, of which we have so much doubt.

With those preliminary remarks, in order to conserve your time, I am going directly to demonstrate some classical cases of deficient secretion of the thyroid, the pituitary, and the gonads. I have only selected the very positive cases because it is from the positive cases, the unquestionable cases, we learn the most. We have to simplify these methods, and you will pardon me if I impose a great deal of information which you probably know more about than I do, upon you, this afternoon, by giving some preliminary easy points for diagnosis.

I want to say that the remarks I will make with regard to cases are based upon an analysis of the correlation and the reexamination of the histories of two thousand endocrine cases, and that these deductions are largely clinical deductions, and we have started out before we classify or group the case as being internal secretory disturbances, with the corollary that we must exclude all other diseases.

We will include only the cases we have gone over carefully, possibly six months and some of them for years. We have had some of them under observation as long as six, seven and eight years, I will say frankly, before we found out what was the matter with them. It is only after we have been able to exclude all other conditions that might have something to do with their symptomatology that we call this endoctrine disturbance.

And then we have to classify them in various groups, depending of course upon their chief ductless gland disturbance. I am not going into the pluriglandular conditions today. We are just going to try to take up a few of the simple classical unquestionable deficiencies of various glands and possibly show you pluriglandular cases occasionally.

We will first start out with the well-known condition of thyroid insufficiency in infancy or cretinism, to emphasize the early diagnosis that has been very thoroughly used and stressed this entire week. Dr. Pottenger spoke of it last night in the early diagnosis of tuberculosis, and the necessity for early diagnosis of malignancy has been brought before you.

Here is a very classical cretin at the age of 3, the same case at the age of 5, and the same case at the age of 16. Now, how are we going to diagnose these cases early enough to get good results? We all know that our results in hypothyroidism in children, or in childhood, or in infancy, are very bad. These results are so poor that a great many men have thrown up their hands saying there is little we can do for them. Now, that is due to a certain extent to a late diagnosis. In an analysis of a series of cases we have had we found out that the diagnosis is rarely ever made before the fifth or sixth year of life.

After that thyroid has been insufficient for that length of time we would have to add to it usually a disturbance of other glands. Now, without taking up too much of your time, I am going to tell you what we think are the important things to make a diagnosis in the first year of life in a hypothyroid infant.

There are four things, first being overweight at birth. Any baby that weighs more than 7½ or 8 pounds at birth is probably a hypothyroid. Now, there are exceptions to that, monsters, hydrocephalics, and other conditions, but in a baby that apparently is normal, we will say, that has no other demonstrable conditions to account for its overweight is probably a hypothyroid and should receive treatment within the first week or the second week of life.

The next point is late dentition. A baby that does not have the first teeth by the time it is six and a half, or seven months at the latest, is probably a hypothyroid baby. The next point is late walking, and the fourth is late talking. Now, how simple those things are. They do not depend upon physical findings. In fact I have had many an argument as to how we can tell whether a baby is mentally deficient at the age of one, two, three or four weeks.

When hypothyroids go to school they find they are not quite up mentally with the other children. They are taken to the doctor and he says they are defective and that we cannot do anything. But when that tooth does not come in until 8, 9, or 10 months, he tells the mother not to worry, that he knows of babies that do not have their teeth until 16 months of age. He has overlooked the early diagnosis. But I want to call your attention to the variability of these cases to show they are not simple hypothyroids. They are glandular cases. Here is a pituitary thyroid individual who had all of the early markings of cretinism, overweight at birth, late dentition, late walking, and late talking, but besides that it had, at the age of three or four probably, insufficiency of the pituitary gland, which make a different individual out of it and requires different treatment. Here is another such type. And the point is if we do not make this diagnosis at the first year of life we are losing our opportunity to overcome the thyroid insufficieicy, we are allowing those individuals to drift on to other glandular insufficiencies in addition to the one they have been born with.

I want you to contrast these children with the last series I showed you. They are pituitary insufficiencies and the diagnosis is made from simply seeing the amount of adiposity they have in the juvenile age. Now, isn't it simple? It is almost too easy to believe, almost too easy to tell. And we would not believe it if we had not found it out by a review of a large number of these cases and finding out at what age they have their adiposity. We found out by trying to transpose the physiology of these different glands into the individuals as they are growing and developing and we are getting more in a diagnostic way than any other way.

Here is a girl four years old; here is one six. They are bright mentally. Their mentality alone tells us they have not thyroid insufficiency. Their adiposity tells us they have insufficiency of the posterior lobe of the pituitary gland. We see in a general way that overweight at birth means thyroid insufficiency—congenital adiposity. Juvenile adiposity, that is the adiposity that comes on between the age of four and the age of 16, 17 or 18 means insufficiency of the posterior lobe of the pituitary gland. The adiposity that comes on later in the approach to adult life means insufficiency of various glands. It may be thyroid, it may be pituitary, it may be a gonad, or there may be a combination of the three, but the existence of that adiposity when it comes on, particularly in the early age, tells us to a lage extent what it is due to, and consequently leads us up to the diagnosis. They are an easy thing to observe. We know at once when children are growing too heavy, when they are growing too rapidly.

Here is a little girl of about 4 years, and there is the same girl at 9. She was a typical cretin at 4, very classical cretin at 4. She had all of this early history I have spoken of, with mental retardation and a tendency to idiocy. She began to take on this adiposity at the age of 8. What happened at that time? Here we have cretinism to which has been engrafted a posterior pituitary insufficiency.

Take the picture I showed you just previous to this. On top of a hypothyroid we have this combination, this thyroid and pituitary insufficiency. Now, these children weer treated as cretins. This one was treated with thyroid therapy in various doses. She doesn't get better. She continues to get fat and other things happen to her. Later on her genital organs do not develop and function and the doctor says "We gave her thyroid and we could not do anything for her." She is a very classical cretin because she has the early history of cretinism, mental retardation, mental deficiency. But I just wanted to show you these one or two examples of what happens if we do not make our diagnosis early.

Here is a boy of 18. Here is what happened.

We know he has besides the insufficiency of his posterior lobe an insufficiency of the anterior lobe. We could not tell in these pre-adolescent children even whether their anterior lobe will be sufficient, because we knew nothing about their genital growth or development at that time, but take the adolescent age when we see we usually have a bi-lobal insufficiency; that is, both lobes are insufficient and the diagnosis is made on the unusual overweight and the adipose distribution with the infantile genitalia.

EDITOR'S NOTE: Dr. Engleman's lecture was of intense interest and loses three-fourths of its value by reason of necessary omission of his extraordinary and often amazing lantern slides of patients with appropriate explanatory remarks thereon.

THE RECENT EVIDENCE AS TO THE NATURE OF WOUND SHOCK

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The condition known as shock, traumatic shock or wound shock has long been very mysterious. The large number of theories which have been propounded to account for the condition is an indication of the mysterious character of the disorder. It is a condition which of course occurs not infrequently in civil life, in railroad accidents and in damage by machinery. It is a condition, however, which occurs under warfare conditions on a very large scale, on a huge scale, indeed.

The fact that this condition itself was occurring on so large a scale through warfare led to a very intensive study of it through the recent war. After we went into the contest a committee of physiologists was established in this country to study shock experimentally. I went abroad early in 1917 as a sort of field agent for the group working here. A committee was established in England shortly after the arrival of the first American group in the English service, and besides this there was a group of French clinicians who likewise were working on this same subject. And what I have to report this afternoon is a sort of summary of the results which were obtained by these three groups of workers.

One of the first things that was made clear was that a distinction should be made between what might be called primary shock and secondary shock. Primary shock is an appearance of the phenomena of shock at a very early stage after the trauma has been received. Usually this is associated with a considerable loss of blood or serious damage to the nervous system. It was a minor number of cases that manifested primary shock as recorded by the regimental medical officers during the war. By far the larger number were cases of secondary shock. The secondary shock is characterized by the appearance of the phenomena of the shock starting at a time amounting to often three or four hours after the reception of the wound or the injury. When the phenomena do appear they are characteristic ones. The patient is pallid, he is cold. There is sweat standing out on the skin; his respiration is superficial, usually interrupted by occasional gasps; the pulse is rapid, it is barely perceptible, and when the blood pressure is taken it is found to be low. These, then, are the characteristic superficial changes which are observed in this condition. The central fact for a good many of these superficial phenomena is the low blood pressure.

In a large number of cases which I had occasion to observe in the British and American service and which others working on these committees also reported, we found that the blood pressure was lowered, from averages approximately from 120 systolic and 80 diastolic down to 76 systolic and 47 diastolic. This is a very considerable drop in the blood pressure. Almost all of the theories which have been brought forward to account for shock have been concerned with ways of accounting for this low blood pressure. Physiologists recognize that there are three factors which can determine blood pressure. There is the heart. If it is weakened the blood pressure will fall. If the vaso-constrictor tone is lessened there is a fall of blood pressure. Still another factor is the blood volume.

All three of these factors have been called upon to account for the low blood pressure of shock. It is not, however, the heart that is at fault. I have repeatedly produced shock in animals in the course of teaching shock and the various ways of taking care of shock cases, and at the end of several hours of low blood pressure have introduced adrenlin to increase the blood pressure to far above the normal and the heart has invariably responded to the higher pressure. These laboratory observations have been confirmed by observations in clinical cases caused in the latter part of the war. We repeatedly gave transfusions which led to a rise of blood pressure from a low level to a normal level with no indications of any disturbance on the part of the heart when this extra load was put upon it. So we can rule out the heart.

There has been a theory of a lessening of the vasomotor tone which began with the observations of Keene, Moorehouse and Mitchell during our civil war, and emphasized by Dr. Hill recently. This assumes there is an excitation of the vasomotor center and a consequent fall of blood pressure because of this peripheral vasal dilatation. We have a good deal of clinical evidence that is not the case. As a matter of fact, the first evidence that was secured on this basis was that produced by English clinical observers who declared when they opened the abdomen that the blood vessels were constricted rather than relaxed.

Furthermore, when shock is produced in the lower animals by whatever means the operator may use, invariably the first effect in the development of low blood pressure is an increased activity of the vasoconstrictor center which leads to a diminution in the size of the peripheral vessels.

There remains, then, one other factor, blood volume. Studies made during the war both in casualty clearing stations on the British front, and also in laboratories, when shock was produced in animals in various ways, have shown there is in the shock state a very marked reduction in the blood volume. This may be reduced as much as forty or fifty per cent.

How can we account for that diminution of blood volume? The concentration of the corpuscles in the capillaries indicates that there has been a loss of the fluid part of the blood from the capillaries into the tissues. It has long been known that protein matters supplying protein products have a very damaging effect on capillary walls; that if they are introduced into the body you can cause a very marked disturbance of all the plasma from the blood streams. There is a great increase in the amount of lymph produced because of the escape of the plasma from the arteries. It is suggested that possibly there was produced by the damaged tissues in these shock cases substances of similar character which, circulating in the blood stream would cause a disturbance of the capillary walls so they were made more permeable and permitted the fluid blood to escape from the capillaries into the lymph spaces and thus resulted in the concentration of blood which is observed and also in the diminution of blood volume.

What is the evidence that there can be those substances given off from the injured tissues which would have this effect? First of all, if you take any tissue of the body, except the anterior lobe of the pituitary and the medulla of the adrenal gland, and make a salt solution and inject it into the blood stream, you can bring the blood pressure sharply down under those circumstances. Furthermore, there is a substance produced by damaged tissues which introduced into the blood stream in extremely minute amounts will produce a condition of extreme shock. It has been obtained also from various tissues throughout the body, and a very small amount of this substance introduced into the blood stream will cause a sharp drop of pressure, a condition of shock and reduction of fluid.

These observations were made by Professor Fellows and myself in London in the years 1917 and 1918, after I had been studying the conditions in human beings during the summer of 1917. These observations made on lower animals were extraordinarily parallel to observations which were made in the French service. It was observed that, if large wounds occurred and tore away a considerable amount of tissue, but left a clean surface, shock very rarely occurred. On the other hand, if a small wound occurred, which caused a considerable amount of damage in the tissues underneath, so there was very little chance for outward drainage, shock was quite commonly a companion of those conditions.

A very interesting instance was reported of a French lieutenant who was caugrt in a dugout when a shell hit and tore it to pieces and caught his two limbs between a beam above and a beam below. He was rescued after something like twelve or sixteen hours. When found he was in good condition, but below the point where the upper beam was resting the legs were somewhat purplish because of the very poor circulation in that part of th legs. His friends worked very hard and got this beam lifted, when the man very promptly went into shock, from which he never recovered. This was an instance in which the blood flowed into a damaged area and came out again, so there was a circulation from dead and dying tissue into the rest of the body which resulted in a fall of blood pressure and the onset of shock which was perfectly characteristic and resulted fatally.

There are certain practical conclusions to be drawn from these observations. In the first place it was determined after this evidence was presented at the interallied surgical congress, that it is desirable, when there is dead and dying tissue still connected with a patient, to remove that tissue by a quick operation, that gets rid of this dead tissue so it does not have the effect which I have described. There is no other thing that can be done. If a part has been so damaged that there is no possibility of saving it, and if there is no possibility of immediate operation, the best thing is to apply a tourniquet as closely as possible above the damaged tissue and to leave it there and perform the operation centrally to the tourniquet, so that never is there any relation between the tissue which has been damaged or crushed and torn and the rest of the body. It is the lifting of the tourniquet which is the serious thing under these circumstances. Probably one of the most effective ways of reducing shock applied during the war was the use of the Thomas splint in cases of thigh wounds. This led in a large degree to immobilization of the fragments of bone so that they were not jarring and agitating in the tissue which had already been injured by the original fragments of shell or bullet.

Now I come to the second point, damage which comes from a low blood pressure. I told you that the blood pressure fell in our cases from approximately 120 systolic down to 76 on an average, but the pressure may be considerably lower than that. If the blood pressure falls from 120 down to 60 millimeters of mercury there is that large drop in the head which is driving the blood through the circulatory system. Let me suppose that, if the blood pressure has dropped from 120 down to 60, there would be half the volume flowing in a given time through an organ, but actual measurement has shown that when the blood pressure drops from 120 down to 60, the volume flowing is reduced not one half but one-seventh. This flow in the head pressure means that the flow of blood through the circulatory system is very greatly retarded. The most important function of blood pressure as it circulates is that of carrying oxygen and, if the blood flow is reduced to one-seventh of its former amount in a given time the amount of oxygen delivered to the tissues in that same time is reduced likewise to one-seventh.

When oxygen is thus reduced it may be inadequate to the demand which the tissues are making for oxidation for the carrying on of the oxidizing process. Our tissues are all the time making acid which is found chiefly as lactic acid. If there is not sufficient oxygen present the acid is set free in the blood stream and unites with sodium and sodium bicarbonate, so that you have sodium lactate forming and CO^2 is set free. Now if the CO^2 is set free, and we have a reduction in the amount of sodium carbonate which is present in the blood we have the condition that is known as acidosis.

The amount of carbon dioxide which may be given off human blood plasma is usually above fifty volumes per cent. That is, if you take 100 cubic centimeters of human blood plasma and extract the carbon dioxide from it which is present in the sodium bicarbonate and other combinations you get about fifty cubic centimeters of carbon dioxide, fifty volumes per cent or more. You observe in all these cases except the first there was either a boundary line or a condition of acidosis, that is, a smaller amount of carbon dioxide given off than the fifty per cent which marks the boundary between normal and acidosis. In other words, there was evidence in these shock cases that the pressure was so low that the blood was not delivering the amount of oxygen to the tissues which they needed for their business.

The next point I want to make is that there are tissues in the body which are extremely sensitive to lack of oxygen. Those are the nerve tissues. We are all aware that a slight drop in the blood pressure, a slight failure of the blood to circulate through the brain results promptly in a loss of consciousness. If there is a continuous failure of the blood to supply the tissues with an adequate amount of oxygen there is a certain result to ensue in the course of time in the failure of these sensitive tissues to function properly. There is in this condition of acidosis evidence of an insufficient supply of oxygen to the tissues, and that insufficient supply is going to affect mainly the nerve tissues, and among these are the important centers in the medulla chiefly affected in connection with shock in the vasomotor centers.

If the blood pressure is allowed to remain low, at a level below the normal so that the oxygen supply is not checked, you can have a loss of tone in the vasomotor center. It has been claimed you can have a fall of blood pressure because of the vasoconstrictor tone. This is not the primary effect but secondary, arising from the low blood pressure and the insufficient delivery of oxygen to the tissue that results in consequence of that low pressure. When the oxygen delivery is thus interfered with by the low pressure there is a diminution in the metabolic rate of the animal.

Furthermore there is sweating. You readily understand that with heat production being less than normal by one half and sweating going on, heat leaves the body and the individual is likely to get cold. That is the reason why a person in shock feels cold. This cold we might regard as contributing to the condition of shock because that has an effect on the blood vessels. You are all aware that when a person does get cold there is stagnation of blood under the surface. The ordinary expression that a person is blue with cold is an indication of the fact there is stagnation of blood in the blood vessels, chiefly in the capillaries. That really contributes to the other factors which I have described as bringing about a diminution of the effective blood volume. The warming up of the patient is one of the most effective ways of dealing with the shock state.

What are some of the practical results that arise from this second point regarding low pressure? The first thing I want to emphasize is the treatment of the low pressure by early measures. If it is allowed to proceed a damage will occur which after a while cannot be recovered from. So that any measures which are taken must be taken promptly, and the most effective measures ordinarily to be taken are simple ones. First of all there should be an application of heat. A person who has been badly wounded should not be allowed to lose his heat. If you have hot water bottles make use of both sides of them.

It is important to restore blood volume just as soon as possible and thereby raise the blood pressure. This is a point which I suppose is most likely to arouse controversy. It has been commonly the procedure to apply vasoconstrictor drugs in shock cases. If the facts which I have presented to you are true, and they have been borne out by a large amount of experience, that is not an effective way of treating shock. You are dealing not with a loss of vasoconstrictor tone in the early stages, but with a lack of blood volume. If you give adrenlin and cause vasoconstriction, you are preventing the blood from going on into the capillaries, and are damming it up in the arteries. The whole circulation exists solely for one purpose, to bring the blood through the capillaries. It is in the capillaries that the interchange takes place between blood and tissues. It is important, therefore, to keep this flow continuous in the capillary areas. The way to do that is to get a sufficient amount of blood into the circulation so that the apparatus will send this volume in adequate degree through the capillaries to permit the delivery of oxygen that will meet the needs.

Undoubtedly the simplest way of increasing this blood volume is by means of fluid by the alimentary tract. It does no good to introduce salt solution intravenously. It simply goes out through the capillaries. It does no good to introduce it through the subcutaneous tissue. You will find it spread through the fascia. The most effective way to alimentary tract. For some reason not explained it stays in the circulatory system. Often these men are vomiting so they cannot take fluid by mouth, and it has then to be given by rectum. In certain cases, in which warmth does not cause a rise of blood pressure to a point above the critical level, it is a very effective way of contributing heat to the body.

If none of these measures have raised the blood pressure above the critical level, and time is passing, the most effective and best way is by means of transfusion of blood.

There are one or two things to be said with reference to operation. We found that during operations under chloroform or ether there was a calamitous drop in blood pressure in a great number of cases that could be entirely obviated by the use of nitrous oxide with oxygen in the proportion of six parts of nitrous oxide to one of oxygen. That produced the same degree of anesthesia that was produced by ether without the symptom of the drop in blood pressure. The same care should be taken in the preoperative period regarding loss of heat. If during the course of operation it is necessary to expose a part of the body after another part has been examined, the first should be covered so there is no loss of heat. Since a man in shock is suffering from lack of blood volume every possible precaution should be taken to avoid any further loss. Precaution should be taken against loss of fluid by the body. Do not overdo the heating because he will sweat and thus will lose further fluid.

Finally there is a precaution to be taken when multiple injuries have been received. We find that, if in an abdominal case, for example, the front part of the body is first attended to, then the individual is turned over on the side or onto the belly, very disastrous results are likely to happen so far as blood pressure is concerned. It is very important to operate on the back first and then turn the patient over and do the operation on the front of the body secondarily.

These, then, are the points that I have made this afternoon and given you their practical application. First is that the low blood pressure of shock is due to a diminution of blood volume; second, this diminution of blood volume is dependent upon a toxic material which is given off by the injured tissues. It is well to get rid of those tissues as early as possible. Do nothing to allow injured or dying tissue to get into relation with the rest of the body. And, third, if the pressure falls below 70 or 80 millimeters of mercury, the pressure is insufficient to deliver blood and oxygen to the tissues to meet the demand and the body is going to suffer in consequence of that. You have got to deal with that situation by giving fluids by mouth or by transfusion in cases where these simple measures do not prevail. And, finally, if there is an operation to be done, nitrous oxide and oxygen are much more preferable as an anesthetic than is the case with ether or chloroform.

MINUTES OF THE FIRST SCIENTIFIC SESSION OF THE PACIFIC NORTHWEST MEDICAL ASSOCIATION

HIPPODROME THEATRE, SPOKANE, WASH.
JULY 8, 1922

Thursday, July 6

The meeting was called to order at 9.10 a.m., the President, Dr. J. Earl Else, presiding.

Dr. Else stated the purposes of the organization.

Dr. Epplen announced changes in the program.

Dr. Henry Christian read a paper entitled, **Certain Phases of the Chronic Nephritis Problem.** This paper was discussed by Dr. W. S. Griswold, of Seattle. The speaker closed the discussion.

The next paper was given by Dr. J. C. Bloodgood, of Baltimore, Md., entitled, **Cancer of the Mouth.** The discussion was opened by Dr. Thomas C. Witherspoon, of Butte, Montana, followed by Dr. R. C. Coffey, of Portland, Oregon, and closed by Dr. Bloodgood.

Dr. Else announced the business session and stated briefly the action of the meeting of the executive committee of the previous day, calling attention to matters requiring action at this time.

It was moved by Dr. W. T. Williamson, of Portland, Ore., and seconded by Dr. L. P. McCalla, of Boise, Ida., that all business incident to the conduct of the meeting and the future organization of the assocation be referred to the Executive Committee with power to act. This motion carried by the unanimous vote of those present.

The meeting adjourned at 12 noon to reassemble at 2 p.m. in the same hall.

Meeting called to order at 2 p.m., the President presiding.

A paper was read by Dr. L. J. Hirschman, of Detroit, Mich., entitled, **Local Anesthesia in Proctology.** Lantern slides, illustrating technic were shown.

The discussion was opened by Dr. E. M. Larson, of Great Falls, Mont., and closed by the speaker.

Dr. W. B. Cannon, of Boston, Mass., spoke on **New Evidence Regarding the Nervous Control of the Thyroid Gland.** Lantern slides were shown. The discussion was opened by Dr. John Hunt, of Seattle, followed by Dr. Wallace I. Terry, of San Fancisco, Calif., and closed by the speaker.

A clinical demonstration by Dr. Frank Billings, of Chicago, Ill., followed with a discussion on the subject of **Arthritis.** There was no open discussion.

The evening session was called to order by the President at 8.00 p.m.

A paper was read by Dr. R. H. Millwee, of Dallas, Tex., entitled, **Deep Roentgen Therapy.** Discussion was opened by Dr. C. B. Ward, of Spokane, followed by Dr. F. S. Bourns, of Seattle, and closed by the speaker.

The next speaker was Dr. F. E. Sampson, of

Creston, Ia., who gave an address on **The Distribution and Delivery of Medical Service.** Numerous stereopticon slides illustrated the subject. Discussion was opened by Dr. W. D. Read, Tacoma, and closed by the speaker.

Friday, July 7

The operative clinic at the Sacred Heart Hospital was given by Dr. L. J. Hirschman, as scheduled at 7.45 a.m.

The morning session was called to order at 9.00 a.m., the president, Dr. Else, presiding.

Dr. H. A. Christian, or Boston, held a clinical lecture on **Hemolytic Jaundice, Pernicious Anemia, Alkaptonuria, and Orthostatic Albuminuria.** Questions were submitted and answered by the speaker in closing.

Then followed an address by Dr. J. C. Bloodgood on **Tumors of Bone,** illustrated by stereopticon slides. The paper was discussed by Dr. E. I. Bartlett, San Francisco, Dr. R. B. Dillehunt, of Portland, and closed by the speaker.

The meeting adjourned at 12 noon to reassemble at 1.30 p.m. at the same place.

The afternoon session was called to order at 1.45 p.m.

A paper was read by Dr. A. W. Adson, of Rochester, Minn., entitled, **Surgery as a Therapeutic Agent in the Treatment of Neurological Lesions.** The discussion was opened by Dr. Laurence Selling of Portland, and closed by the speaker.

An address by Dr. Frank Billings followed, entitled, **Present Day Problems of Medical Practice.** Discussion was opened by Dr. W. T. Williamson, of Portland, and closed by the speaker.

The next paper was by Dr. W. I. Terry, of San Francisco, on **Surgical Considerations of Goiter,** with lantern slides. The discussion was opened by Dr. J. E. Else of Portland, followed by Dr. H. R. Storrs of Vancouver, B.C., and closed by the speaker.

The meeting adjourned at 5 p.m., to reassemble at 8 p.m. at the same place.

The evening session was called to order by the President, Dr. J. E. Else, at 8 p.m. in the Hippodrome Theatre.

The first address was by Dr. E. C. Rosenow, of Rochester, Minn., on **Experimental Studies in Etiology of Epidemic Encephalitis, Epidemic Hiccup, Spasmodic Torticollis, and Allied Conditions.** Illustrated by moving pictures and lantern slides. There was no discussion.

The next paper was by Dr. F. M. Pottenger, of Monrovia, Calif., on, **Some of the Newer Methods in the Physical Diagnosis of Diseases of the Chest.** Discussion was opened by Dr. R. W. Matson, of Portland, Ore., and closed by the speaker.

Saturday, July 8

The Surgical Clinic of Dr. L. J. Hirschman was held at the Sacred Heart Hospital as scheduled, at 7.45 a.m.

The morning session was called to order by the President, Dr. J. E. Else, at 9 a.m.

The first speaker on the program was Dr. H. C. Christian, of Boston, on, **Digitalis and Quinidin in the Treatment of Certain Types of Chronic Cardiac Disease.** The discussion was opened by Dr. B. D. Gillies, of Vancouver, B.C., followed by Dr. G. A. Dowling, of Seattle, and closed by the speaker.

The next paper was by Dr. J. C. Bloodgood on **Tumors of the Breast.** Discussion was opened by Dr. L. P. McCalla of Boise, Ida., followed by Dr. E. I. Bartlett, of San Francisco, and closed by the speaker.

At the close of the morning session, the Secretary, Dr. H. D. Dudley, of Seattle, read the list of nominations for the various offices and the councillors, as recommended by the Executive Committee. It was moved by Dr. L. P. McCalla, of Boise, Ida., and seconded by Dr. W. O. Spencer, of Portland, Ore., that the nominations be closed and the secretary be instructed to cast an unanimous ballot for the nominees. The motion carried unanimously.

The following officers were elected for the ensuing year: President, J. E. Else, Portland, Ore.; President-Elect, H. D. Dudley, Seattle; First Vice-President, A. S. Munro, Vancouver, B.C.; Second Vice-President, J. E. Tyree, Salt Lake City, Utah.

Councillors: Oregon, N. W. Jones, Portland; P. J. Bartle, Eugene; E. A. Sommer, Portland. Washington, R. T. Congdon, Wenatchee; A. A. Matthews, Spokane; J. R. Brown, Tacoma. Idaho, G. R. Scott, Twin Falls; J. W. Gue, Caldwell; L. W. Chilton, Nampa. Utah, Ernest Van Cott, Salt Lake City; G. G. Richards, Salt Lake City; J. R. Morrell, Ogden. Montana, F. F. Attix, Lewistown; Leroy Southmayd, Great Falls; E. M. Larson, Great Falls. British Columbia, B. D. Gillies, Vancouver; R. W. Irving, Kamloops; H. R. Storrs, Vancouver. Alberta, E. W. Allen, Edmonton; H. A. Gibson, Calgary; L. S. Makid, Calgary. Saskatchewan, H. E. Monroe, Saskatoon; H. L. Jackes, Regina.

It was announced that the next meeting place should be Seattle, Washington, the time to be later announced.

The report of the Resolutions Committee, appointed by the President, was then read. Moved by Dr. W. O. Spencr, of Portland, and seconded by Dr. H. W. Coe, of Portland, that the resolutions be adopted. So ordered.

"Be it resolved that, in appreciaton of the untiring efforts of those in charge to make this meeting of the Pacific Northwest Medical Association a success, the members desire at this time to express their thanks to all who have helped to accomplish this result.

"In particular are our thanks due to Dr. F. Epplen and Dr. J. E. Else, for the time they have given to the arrangement of its meeting at the sacrifice of their private work; to the guests for the splendid program they have given us; to the Spokane Medical Society for assuming the financial obligation at a time when the success of the meeting was doubtful; to the local Red Cross for its cooperation in making the public meetings a success; to Dr. Langworthy for his patience and courtesy at the Bureau of Registration; to the management and employees of the Davenport Hotel for their efforts to insure our comfort; and to Whitlock's for refreshments served during the session.

Lastly, are we greatly indebted to the newspapers for the publicity given the meeting, especially the public meetings, in getting over the messages intended for the general public."

Dr. J. B. Eagleson, of Seattle, then read an introductory letter, with a resolution on the organization of the Gorgas Memorial Institute of Tropical and Preventive Medicine, looking toward the raising of a six million dollar subscription fund for the establishment of said institution. Moved by Dr. Eagleson and seconded by Dr. L.

P. McCalla that the resolution be adopted as read. Carried.

"Resolved that the Pacific Northwest Medical Association does most heartily approve the founding of the Gorgas Memorial Institute of Tropical and Preventive Medicine by Dr. Belisario Porras, the President of Panama, and his associates, and that we extend a vote of thanks to the people of the Republic of Panama for their great generosity in providing the sum of $500,000 for the beautiful Memorial Building, and its equipment, and also in donating the use of the new $2,000,000 Santo Tomas Hospital to the Institute for the study of Tropical Medicine.

And be it further resolved that this association heartily approves the creation of an Endowment Foundation of $6,000,000 for the purpose of carrying on the work of the Institute, and that we instruct the delegates here present to make known this great work for the health of humanity is their respective home communities."

The meeting adjourned to reassemble at 1.30 at the same place.

The afternoon session was called to order at 1.30 p.m. by the President, Dr. Else.

The first paper was given by Dr. A. D. Dunn, of Omaha, Neb., **Some of the Problems Involved in the Lyon-Meltzer Method of Biliary Drainage.** The discussion was opened by Dr. Leo Ricen, of Portland, Ore., and closed by the speaker.

The next paper was by Dr. William Engelbach, of St. Louis, Mo., **Diagnosis of Disorders of the Ductless Glands.** Illustrated with stereopticon slides. Dr. J. M. Blackford, of Seattle, proposed that the discussion be dispensed with and the speaker given the additional time to take up the matter of treatment. This proposal was moved and carried.

The next paper was Dr. W. B. Cannon, of Boston, Mass., **Recent Evidence as to the Nature of Wound Shock.** There was no discussion.

The last paper of the program was read by Dr. John Butler, Minneapolis, Minn., **Diagnosis and Treatment of Epidermophyton Infections.** Illustrated by lantern slides. Discussion by Dr. H. G. Parker, Portland, Oregon.

There being no further business the meeting adjourned to meet at 6 p.m. in the Marie Antonette Room of the Davenport Hotel for dinner.

BANQUET

Dr. J. B. Eagleson, of Seattle, acted as toastmaster and with a few introductory remarks, called upon Dr. W. B. Cannon, who gave the address of the evening, on **Bodily Changes Produced by Profound Emotional States.** Discussion by Dr. William House, of Portland, Ore.

Mrs. W. B. Cannon then read an original poem.

Dr. J. E. Else gave a brief outline of the organization of the association.

Dr. Frederick Epplen referred to the support given him by the local profession and the favorable publicity given by the local newspapers, and the entertanment for the visiting women, arranged by the wives of Spokane's physicians.

Dr. H. D. Dudley moved that a vote of thanks be extended to the local profession and the Ladies Committee providing the entertainment furnished, and to all visiting speakers for their instructive and interesting participation in the program.

The assembly then arose and sang "Auld Lang Syne," and adjourned.

H. D. DUDLEY, M.D., Secretary.

CONSTITUTION AND BY-LAWS OF THE PACIFIC NORTHWEST MEDICAL ASSOCIATION

Adopted by the Executive Committee Appointed to Organize the Pacific Northwest Medical Association on July 7, 1922

Ratified by the General Assembly of the Pacific Northwest Medical Association July 8, 1922

ARTICLE I.

The name of this Association shall be The Pacific Northwest Medical Association.

ARTICLE II.

The purpose of this Association shall be to develop and promote scientific medicine, and to bring the medical profession of the Pacific Northwest into a closer relationship. This Association shall have no direct connection with, be controlled by, nor control any other society or organization. The meetings of this Association shall be for the purpose of reading and discussing papers pertaining to the science of medicine, public health, and medical education. This Association shall not take any active part in any economic, political or sectarian question, nor any concerted movements for the passing of legislative acts.

ARTICLE III.

Membership

Sec. 1. The membership of this Association shall be limited to the membership of the state associations of Montana, Idaho, Washington, Oregon, Utah, and the provincial societies of British Columbia, Alberta and Saskatchewan, and physicians in the service of the United States Government or the Dominion of Canada, residing in the said states and provinces.

Sec. 2. Invited guests shall have the privilege of the floor in all scientific discussions, but shall not take part, except by invitation of the president with the permission of the members present, in matters pertaining to the management of the Association. The privilege of the floor may be extended by the president, with permission of the members assembled, to visiting physicians from states not included in the Association.

Sec. 3. Physicians who are members in good standing in state or provincial medical associations, not included within the territory of this Association, may become non-resident members by making application in the manner provided for other members.

ARTICLE IV.

Scientific Work

Sec. 1. The scientific meetings of this Association shall be divided into two or more sections, including at least medicine and surgery, provided that this section shall not be construed to forbid general sessions.

Sec. 2. The interpretation as to the section to which a given subject shall be assigned shall be determined by the program committee.

ARTICLE V.

Meetings

Sec. 1. The Association shall hold annual meetings. At the annual meeting, there shall be a general session at least on the first and last days.

Sec. 2. The time and place of the annual meeting shall be fixed by the council.

ARTICLE VI

Officers

Sec. 1. The officers of this Association shall be a president, a president-elect, two vice-presidents, a secretary-treasurer, and a council composed of three members from each state and province in the Association.

Sec. 2. The president-elect, vice-presidents, and councillors shall be elected annually, in the general session, on the last day.

Sec. 3. The secretary-treasurer shall be elected for a term of three years. The president-elect shall serve for one year as president-elect and the succeeding year as president. The term of the vice-presidents shall be one year, the councillors three years. One councillor shall be elected for each state and province each year.

Sec. 4. The officers of each section shall consist of a chairman, vice-chairman, and secretary, and shall serve for one year.

ARTICLE VII.

Funds

Sec. 1. The funds of this Association shall be derived from annual dues fixed by the council.

Sec. 2. The funds of this Association shall be paid out by the secretary-treasurer, upon warrants drawn by him and countersigned by the president.

ARTICLE VIII.

This constitution may be amended by a two-thirds vote of those present and voting, at the last general session of any annual meeting, provided that the amendment has been presented in writing to the council at least two months before the annual meeting, and when approved by the council, the secretary-treasurer shall notify all members of the Association by mail at least one month preceding the meeting at which the amendment is to be voted upon.

BY-LAWS

ARTICLE I.

Membership

Sec. 1. Each member of the Association in attendance at the annual meeting shall register, indicating the state or provincial society of which he is a member, and pay his dues for the coming year. No member shall be permitted to attend the meetings of this Association if he has not complied with the provisions of this section.

Sec. 2. No one except members in good standing, and guests, shall be permitted to attend the regular sessions.

Sec. 3. Application for membership in this Association shall be made in writing to the secretary-treasurer and be accompanied by satisfactory evidence of good standing in his state society, and the annual dues.

Sec. 4. The right to accept or reject any application for membership is reserved to the council.

Sec. 5. Any member of this Association who shall voluntarily sever his connection with his state society or who shall be expelled or suspended by his state society shall automatically forfeit his membership in this Association. The Association reserves the right to expel a member for cause, providing he has previously been notified, in writing, of the charges preferred against him and shall have been given an opportunity to appear before a committee of the council appointed by the president for this purpose. Charges against a member may be preferred by any elected officer, three members of the council, or five members of the Association. When charges are preferred against any member, he shall be notified immediately by the secretary-treasurer and shall be given an opportunity to defend himself before a committee of the council appointed by the president for that purpose, at or before the next annual meeting. The council must act upon the recommendations of the committee before the close of the next annual meeting, after such charges shall have been preferred. Be it provided, however, that when charges are preferred against a member within the last thirty days preceding an annual meeting, action shall be postponed, if requested by the member against whom charges are being preferred, or may be postponed at the discretion of the president or council.

Sec. 6. All dues shall be due and payable on January first of each year and shall not be delinquent until the beginning of the next annual meeting.

ARTICLE II.

General Meeting

Sec. 1. A general session shall be held on the first and last days of the annual meeting. At the close of the first general session, an opportunity shall be given for the introduction of new business from the floor, which business shall be referred to the council for action. The general sessions shall be presided over by the president, or in his absence, by one of the vice-presidents, or in the absence of all three, by such person as the council may select.

Sec. 2. Except by consent of the council, the authors must read their papers at the time specified in the program. No papers shall be read by title, except when the author is present, and the unanimous consent has been given by those present in the meeting, at which the paper was to have been read.

Sec. 3. With the exception of the annual address of the president, and the papers by invited guests, an author shall not be allowed more than twenty minutes for his paper, except by consent of the program committee, and no one shall speak longer than five minutes in discussion, nor speak more than once upon any one subject, provided, however, that the author of a paper may have ten minutes to close the discussion of his paper.

Sec. 4. All papers read before this Association shall become the property of the Association, and may be published by the Association. A copy of each paper or address shall be handed to the secretary-treasurer by the author when the paper is read. No paper shall be published except upon recommendation of the publication committee, which shall consist of the secretary-treasurer, as chairman, and the chairman and the secretary of each of the sections as the other members of the committee.

Sec. 5. No papers shall appear on the program or be read before any section, unless the title of the paper or address, with a synopsis, shall have been in the hands of the secretary-treasurer at least thirty days preceding the date of the meeting.

ARTICLE III.

Election of Officers

Sec. 1. All elections shall be by ballot, provided that where there shall be only one nominee, the secretary or president may be instructed to cast the ballot of the Association upon unanimous vote. A majority of the votes cast shall be necessary for an election. When no candi-

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date receives a majority of the votes cast, the one receiving the least number of votes shall be dropped and another ballot taken. This method shall be continued until one candidate receives a majority.

Sec. 2. The council of this Association shall act as a nominating committee, and make its report at the beginning of the last general session, naming one candidate for each office; and it is further provided that additional nominations may be presented from the floor.

Sec. 3. Each section shall elect its officers at the last session of its section.

ARTICLE IV.

Duties of Officers

Sec. 1. The president shall preside at all meetings of the Association or council, shall appoint all committees not otherwise provided for, may deliver an annual address at the last general session of each annual meeting, shall give a deciding vote in case of a tie, and shall perform such other duties as usually devolve upon a president.

Sec. 2. The vice-president shall assist the president in his duties, and in the event of his death, resignation, or removal, the vice-president shall succeed him in order.

Sec. 3. The secretary-treasurer shall act as secretary of the council, secretary of the Association, and chairman of the program committee. He shall receive all monies due this Association and shall deposit the same in a bank approved by the council. He shall pay out the funds of the Association upon warrant drawn by himself and countersigned by the president. He shall make an annual report before the council at the time of the regular meeting. The secretary-treasurer of this Association shall be under a five thousand dollar bond, the cost of the same to be paid by the Association. The secretary-treasurer, acting with the officers of the various sections, shall arrange all programs of the Association. He shall provide for the registration of the members at the annual meeting, he shall conduct the official correspondence, notify officers of their election, committees of their appointment, and such other duties as usually devolve upon a secretary.

ARTICLE V.

The Council

Sec. 1. The council shall consist of the elective officers and representatives of the various states and provinces included in this Association and shall hold meetings during the annual meeting of the Association and at such other times as necessity may require, subject to the call of the president, or upon petition of any five councillors. It shall hold an annual meeting on the day preceding the first day of the annual meeting of the Association, in the city where that meeting is to be held. The secretary-treasurer shall keep a permanent record of the proceedings and shall make an annual report for the council to the association. In the interim, business may be transacted by correspondence.

Sec. 2. The council shall be the legislative body of the Association and shall have jurisdiction over all questions involving the rights and standing of members. All matters brought before the general meeting shall be referred to the council before a vote may be taken. The council shall make a study of such matters and bring back a report, if so requested, to the general session on the last day of the annual meeting. The council shall fix the salary of the secretary-treasurer and have supervision over the expenditures of all funds.

Sec. 3. Providing that all of the representatives from any state or province shall be absent at an annual meeting, the president shall appoint some member from that state or province to represent said state or province during the meeting or until one of the absent councillors shall appear.

ARTICLE VI.

Committees

Sec. 1. Committee on Arrangements. This committee shall be appointed from the city where the annual meeting is to be held.

Sec. 2. The Program Committee shall consist of the President, the President-elect, and the Secretary-Treasurer.

Sec. 3. Other standing committees may be created by the council when deemed necessary.

ARTICLE VII.

Rules of Order

Robert's Rules of Order shall be followed in all matters not covered by the Constitution and By-Laws.

ARTICLE VIII.

Amendments

These By-Laws may be amended by the council at its last session at any annual meeting by a two-thirds affirmative vote of the members present and voting, provided the amendment shall have been presented in writing to the secretary-treasurer, and shall have been laid upon the table for one day.

ADVERTISERS' NOTES

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ADDRESS

GENERAL SEPTIC PERITONITIS AND ITS TREATMENT*

A. C. BEHLE, M.D., F.A.C.S.
SALT LAKE CITY, UTAH

The enormous death rate from this disease that statistics show has impelled me to address you on this subject. My interest in infections of the abdominal cavity caused me to write a paper on this subject seventeen years ago. Twenty-five years ago we seldom saved a case of general septic peritonitis. The progress of medical science can well be shown by the steady gain in the number of lives that have been saved.

Let me call you attention to a chart which I have taken from the paper of Bauer[2], in the General Hospital in Malmo. Cases of acute free purulent peritonitis from 1897 to 1911.

Year	Number	Recovered	Died	Mortality
1897	1	0	1	100
1898	4	0	4	100
1899	5	2	3	60
1900	24	15	9	37.5
1901	7	4	3	43
1902	16	12	4	25
1903	36	26	10	28
1904	36	29	7	28
1905	31	24	7	22.5
1906	32	22	10	31
1907	45	40	5	11
1908	57	49	8	14
1909	34	29	5	14.7
1910	41	34	7	17
1911 First half.	20	18	2	10

These statistics, I think, are fairly average of conditions at that time. Unfortunately, at the present time we are still losing too many cases. The record of the Salt Lake City Board of Health shows nineteen deaths from general septic peritonitis during 1921. There is no other disease where the morbidity has been brought so low in the last few years. Peritonitis is the greatest danger after operation in the abdominal cavity.

Crile[3] has in recent years reduced his mortality rates 33 1-3 per cent, and in appendicitis it has been lowered 67.6 per cent. More cases should be saved in the future. The use of ether as a cleansing agent in general septic peritonitis, as advocated first by Souligioux and Morestin (quoted from Tarnowsky[4]), has shown some brilliant results. I have as yet not used it. It does not seem to depend upon its antiseptic action. The recent work of Cunningham[5] shows that mild irritants have a stimulating action on the connective tissue as well as the serous lining of the peritoneum. This may lead us into paths showing that the irritating action of the ether may aid the warfare against infection. Some of the reports as to the use of ether are brilliant. Neudorfer[6] states that the pulse becomes normal in twenty-four hours after its use, with most extraordinary improvement in the condition of the patient. Dubs[7] thinks it should be used in every case of peritonitis. He thinks the irritating action of ether causes a hyperemia, increases peristalsis, and produces a general tonic action.

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* President's Address read before the Twenty-eighth Annual Meeting of Utah State Medical Association, Salt Lake City, Utah, Aug. 31-Sept. 2, 1922.

The injection of camphor in oil, as advocated by Glimm[8], in 1906, still has its advocates. The object seems to be to prevent rapid absorption. I have not used it. The question first raised by Rehn (quoted by Noetzel[9]), as to reestablishment of the normal intraabdominal pressure, has recently received a setback. The investigation of Keppich[10], in Clairmont's Clinic of Basle, has shown that the pressure normally in the peritoneal cavity is negative.

The raising of the alkali reserve in peritonitis has been advocated, but Willis[11], in a recent research, criticizes Crile in assuming that an acidosis exists. He objects to the use of soda. He states, "From clinical observation I have failed to observe any benefits that I could attribute to the action of soda." His experiments on dogs and in clinical cases on man are worthy of study. His conclusions are that acidosis is not an important factor in peritonitis; that there in no justification in the use of sodium bicarbonate in patients suffering from peritoneal infection, and no justification of the routine use of alkaline therapy. He states, "Reserve its use to those cases in which appropriate tests have demonstrated a reduction in the reserve alkali to a point at which it may cause harm."

The question of the seat of warfare in peritoneal infections has been vigorously attacked recently. Is it in the general circulation or in the peritoneum? Fromme and Friel[12] have recently made reserches in this direction. They think at first bacteria are taken up by the lymph stream and they cause a coagulation of the lymph, and in that way prevent the bacteria reaching the general circulation. They explain the rapid exhaustion of the patent, the dry tongue and the excessive thirst by the fact that nourishment from the intestine does not enter the blood vessels. Practical results might come from this fact by seeing that fluids are given subcutaneously or even directly into the blood. This has been done by continuous subcutaneous infusions or directly into the vein, by the drop method.

Bolton[13] has recently shown that absorption from the peritoneal cavity occurs in two ways: First, by its subperitoneal capillary blood vessels; second, by its lymphatic vessels. He states that for many years it has been recognized that the contractions of the diaphragm and the alterations in pressure so produced in the abdomen and thorax during respiration are the means whereby the necessary force is supplied to produce a flow into the lymphatics. Is it not wise in our cases of peritonitis to promote proper absorption by a proper position of the patient? The question arises, do large doses of morphia, as advised by Waugh (quoted by McEachren[14]) and Crile[3], favor a better position and breathing of the patient?

I will briefly sketch why we are saving more lives now in this disease, with an outline of the treatment that has appealed to me in the handling of these cases. During my work as an intern twenty-seven years ago, this was the usual procedure.

A large incision was made eradicating the source of infection, often a third or fourth incision hunting more exudate, the bowels being turned out and the exudate wiped away with gauze. The gut was often milked, enterostomy was frequently done, or the gut was punctured to remove gas. The abdomen was irrigated, sometimes permanent irrigation being established. These procedures took time, sapped the patient's vitality, caused great work in after treatment and, if a patient recovered, which was very rare, there was a prolonged convalescence.

The improvement in treatment has been mainly by education of the public and a better understanding by physicians of the etiology. The patients now enter the hospitals very much earlier, usually the first day, seldom the second. They often come in one hour after the beginning of the trouble. They are operated upon at once, and we can therefore eradicate the source of infection in the beginning. I wish especially to impress upon you that the time element is all important. As small an incision as possible is made, injury to large nerves being avoided. The pus and exudate is removed as gently as possible. Bear in mind that this exudate contains markedly protective substances, and that it is a question as to the advisability of removing it. Certainly no injury must be done to the peritoneum, the gut must be kept in the abdomen as much as possible with very little manipulation. All surgeons are agreed that the source of infection should be removed, as the removal of a gangrenous appendix, the removal of a perforated gall-bladder, the closing of a perforation of the stomach or viscera, etc.

If cases are operated on early, the abdomen should be entirely closed. As the operation has not consumed much time, therefore, the amount of anesthetic has been small, and the patient rapidly gains strength. The less the intoxication the less the after treatment, and in a week to fourteen days your patient is up and around with a primarily healed wound, and again ready to take up the usual routine without any effects of the affliction that threatened his life.

The last few years have seen the number of cases of general peritonitis in hospitals very much decreased, due mainly to the fact that the inflamed vermiform appendices are removed so much earlier; they have been the cause of far the greater number of cases of general peritonitis. The public generally is avoiding cathartics where appendicitis is suspected. Food is also withheld, and the doctors are called in much earlier. Those cases of peritonitis that we now see are mainly of the serous or seropurulent type.

In outlining certain details of the treatment we must face certain questions. All surgeons are agreed that removing the source of the infection should be done if possible. We must carefully get the clinical history of the case, and have a good understanding of the etiologic processes at work to enable us to eradicate the cause. For instance, a gonococcic peritonitis, due to infection from the tube, is not an operative case. The peritoneum will with proper care take care of this infection, and only the late results may need operative procedure. The treatment is that we would use to combat the gonorrhea present. In hematogenous infections of the peritoneum, notably that with the pneumococcus, the seat of battle is not in the peritoneum but in the general circulation. We must use all measures of value to assist the favorable outcome of that battle, and the system must not be weakened by operative procedures. Naturally, a walled off abcess must eventually be drained.

The question now arises, shall we leave the exudate in the abdomen, or shall we wash it out? Shall it be wiped out? The late John B. Murphy was a pioneer in handling infections of the abdomen. His report in 1904[25] showed that removal of the source of infection is really all that is necessary. He removed that source as soon and as quickly as possible with a minimum amount of anesthesia. He stated that irrigation only removed the protective exudate whose leucocytes cared for all bacteria remaining. He advocated Fowler's position, that of raising the shoulders to drain fluids toward the less absorptive part of the abdomen, namely, the pelvis, and away from the central tendon of the diaphragm. Fowler used this position first in October, 1899[15], and made a report[16] in January, 1900. Rehn claims priority, and to have used this position in 1900, as reported by Bode[17]. I think we have the right to refer to it as Fowler's position.

Let me call your attention for a moment to an article published recently by Koch[18]. He has shown that the great omentum is a bactericidal, an exudate forming, and an absorbing agent of the first class. It has much greater powers of absorption than the diaphragm. The area around the central tendon of the diaphragm is secondary in its absorptive power to the omentum. We can now understand why in favorable cases of peritonitis (those circumscribed cases) the friendly omentum is always present. However, this is nothing against Fowler's position. What is the nature of this exudate into the peritoneal cavity?

Hughes[19] states that "this fluid microscopically contains large healthy staining cells with a few polymorphonuclear leucocytes which stain well, but no bacteria." "It is highly protective in character, and at first possesses decided bactericidal powers." "The next stage is an impairment of the vitality of the fluids poured out into the peritoneal cavity." "The rate of destruction of the vitality of this protective fluid depends upon the degree of intraabdominal tension, the virulency of the infection, and the patient's general resistance."

Many authorities, and I must say that the majority in Europe, still drain the abdomen. On this question two strong opposing factors are still present in Europe, especially in Germany. One is known as the school of Rehn, of whom

Noetzell[9] is one of the strongest supporters, who advocate drainage in all cases. Kehn uses a small drain in Douglas cul-de-sac, and closes abdomen, except for this drain. The opposing school is headed by Rotter[20], who, before the Surgical Congress at Berlin, December 13, 1909, came out with a strong plea for the immediate closure of the wound in cases of peritonitis. The procedure advocated by him was regular removal of the cause, especially in appendicitis, cleansing the peritoneal cavity by the dry method, namely, wiping with gauze, or irrigating, and closing the cavity.

Clark[21], in this country in 1902, was the first to entirely close the abdomen and not drain, and wrote in regard to the disadvantage of gauze packing in appendicitis work. He allowed no drain or tampon unless the lymphatics and serosa could not drain themselves. I have not time to go into the question of drainage except to state that both methods have their adherents and my position is an intermediate one. All early cases I close, and have seen only good results. Late cases I often wall off with gauze, feeling that the primary focus is the older process, whereas other parts of the peritoneum not infected as long will easily care for the infection. I use various drainage materials, and each has its advantage.

Coffey[22] has written an excellent article on drainage. He believes gauze produces a mechanical irritation with marked outflow of serous fluid. Iselin[23] has also written a good article on drainage. He does not believe that we can entirely do without drainage, now or in the future.

Rotter[20] agrees with Coffey[21], that drainage does good only for a few hours. I must, however, strongly protest against the use of any foreign bodies in the peritoneal cavity, if avoidable. Foreign bodies of any kind produce marked injury in the peritoneal cavity, and interference with the warfare going on in the body to combat infection. The seat of this battle is mainly in the peritoneal cavity. The use of talcum powder on your gloves and drains, heavy silk ligatures, etc., should be condemned, as all are irritants.

A recent article by Marchand[24] has shown that foreign bodies produce marked inflammatory changes, namely, hyperemia, wandering out of leucocytes with a later increase of mononuclear cells and formation of foreign body giant cells. Foreign bodies irritate the connective tissue cells and serosa cells. Most of the free cells of the exudate come from the plasmatocytes, but the protecting cells are the serosa cells, and if they are destroyed the connective tissue cells will produce extensive adhesions, as shown by Cunningham[5]. Avoid interfering with nature's fight as much as possible by avoiding foreign bodies. Instead of the old saying by Munde in 1887, "When in doubt, drain," I think at the present time it is better as quoted by Maier[28]: "When in doubt, do not drain."

After having cared for the abdomen we come to the after treatment. Here is where the brilliant work of certain men shines especially: Fowler[16] with his postural treatment, Murphy[25] with his advocating of rectal infusions of normal saline and tap water by the drop method to remove toxines and replace water removed from the body by vomiting, Ochsner[26] who has so well shown that the extension of the infection thruout the peritoneal cavity is caused by the peristaltic action of the intestine and by handling from the operative field before it had become circumscribed. He fought the unnecessary peristalsis of the small intestine by prohibiting the use of every form of nourishment, fluid and cathartics by mouth, using gastric lavage to remove any fluid or mucus from the stomach. Nourishment if necessary is given by the bowel. His rules for preoperative care have also been of tremendous help and I can do no better than repeat his words. "In all cases of acute appendicitis without regard to the treatment contemplated, the administration of food and cathartics by mouth should be absolutely prohibited. It should be constantly borne in mind that even the slightest amount of liquid food of any kind by mouth may give rise to dangerous peristalsis."

Crile[3] has contributed very much to our treatment of patients by showing the necessity of great care in anesthesia, especially advocating nitrous oxide and using blocking by local anesthesia to prevent the nervous exhaustion caused by nerve injury, also the gentle handling of all tissue and the necessity of sleep before and after operations.

Iselin[23] has shown the splendid results from local applications of heat to the abdomen in improving the inflammatory condition of the peritoneum.

Waugh (quoted by McEachren[14]) of London, and also Crile[3] of Cleveland, have shown good results of heavy doses of morphia in the after treatment, altho Crile advises against its use in streptococcus infections.

SUMMARY

1. Peritonitis suspected, give absolutely nothing by mouth, no cathartics. Educate the public in this line.

2. Operate as early as possible to remove the source of the infection.

3. Do as little as possible except to eradicate the source of infection. Do no damage to the peritoneum.

4. In early cases do not remove the exudate and do not drain. It is granted that, with coarse foreign material, as in a perforated stomach or a large rent of the colon, the foreign material should be removed.

5. Place patient in Fowler's position.

6. Overcome the toxemia by subcutaneous infusions and rectal infusions of normal saline.

7. Overcome dehydration by rectal tap water, and at times by 5 per cent glucose and 5 per cent sodium bicarbonate solutions by bowel.

8. Use local heat over the abdomen by thermophor.

9. Support the circulatory system by cardiac stimulations as digitalis, strychnia, adrenalin and pituitrin.

10. Morphia, if necessary, to quiet patient and control peristalsis.

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ORIGINAL CONTRIBUTIONS

EPIDERMOPHYTON INFECTION OF THE SKIN

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There is a fungus infection of the skin not generally recognized as such that is fairly localized to parts of the body. This affection has been named "epidermophytosis" and it may be differentiated morphologically and culturally, tho not always clinically, from the well known ringworm (trichophytosis) affections or determatoses of an eczematous nature. The essential clinical difference between the epidermophytons and the trichophytons are that the former never attack the hair shafts or follicles and tend to run a chronic course with seasonable intermissions of comparative quiescence, whereas the trichophytons selectively attack the hair shafts and follicles and run a fairly well defined course with no tendency to seasonable relapses.

The epidermophyton infections are localized in the order of frequency to the feet, hands, crural region and axilla; other parts of the body, such as the nails, scalp, lower abdomen, perineal, sacral and inframammary regions, are occasionally involved.

The affection in any of these regions may show a variety of clinical aspects, notwithstanding the fact that the causative fungus is of the epidermophyton variety. Thus the infection of the feet and hands may be clinically indistinguishable at times from the so-called dyshidrosis, or a vesicular, intertriginous or tylotic eczema. The affection in the crural region and axillæ agrees largely with our clinical conception of trichophytosis of the body surfaces, whereas the scalp affection simulates in many respects a chronic, patchy, seborrheic eczema. Epidermophytosis has in the past, and is at the present time, generally regarded by many physicians as a true eczema, notwithstanding the fact that in 1869 one type of it, namely, eczema marginatum, was regarded by Hebra, of the Vienna school, as a fungus infection.

A brief review of the literature concerning this common disease will not be out of place:

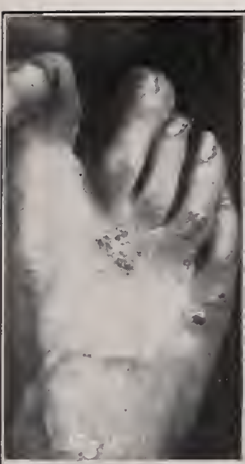
Hebra first described the skin affection that we know as eczema marginatum in 1869. He recognized the fungus nature of the disease, but believed that the term which indicated its eczematous nature should be preserved. Later Pick and Kaposi found fungi similar to those of trychophytosis in the epidermal scrapings of the lesions in this disease. In 1892 Mouktar of Constantinople drew attention to the occurrence of lesions on the palms and soles, due to a fungus growth producing at first vesicles resembling a dyshidrosis or vesicular eczema, and later a dry stage simulating a chronic infiltrated eczema or a palmar syphilide. In 1905 Castellani demonstrated fungi in Dhobie itch which is an eczema marginatum plus pyogenic infection. Castellani named this fungus "trychophytosis cruris." In 1907 Saboraud proved that this fungus was not a trychophyton, but belonged to another genus and he renamed it "epidermophyton inguinale." In 1910 Whitfield classified the disease into three types:

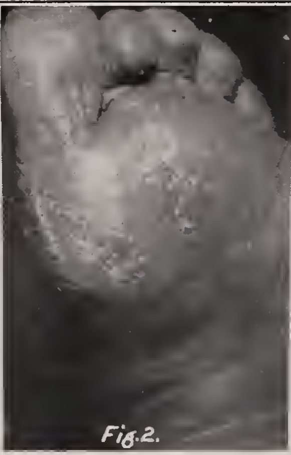
1. An acute vesicobullous of sudden onset, with all the characteristics of a vesicular eczema or dyshidrosis.
2. Chronic intertriginous of toes; secondary to acute vesicular type. Whitened, sodden mass of epithelium between the toes.
3. Chronic hyperkeratotic, with enormous and irregular masses of overgrown horny layer, usually on the feet, but may involve the entire plantar surface. Scattered vesicules and pustules may be found.

In 1916 Ormsby and Mitchell published in detail a masterful paper on epidermophyton infections of the feet and hands. In 1919 and 1921 White and Greenwood published their observations and added to Whitfield's classification three more clinical varieties, namely, the macular, papular, and nail infections. So, today we recognize six clinical varieties of this disease: Macular, papular, vesicular, macerated (intertriginous), hyperkeratotic, nail involvement. Quite recently Wende, Mitchell and Williams have further enlightened the profession on the morphology of the disease.

A regional description of the disease will be given on account of its variable clinical aspects on different parts of the body:

The primary lesion on the foot consists of deep-seated vesicles. The vesicles are formed in the deeper layers of the epidermis, show a tend-





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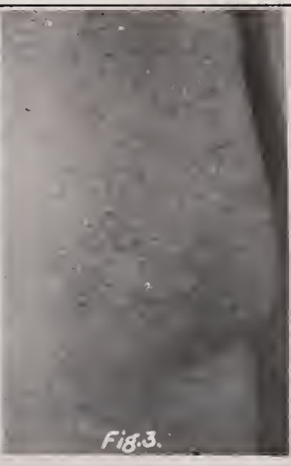

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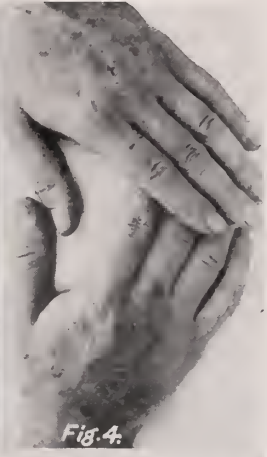

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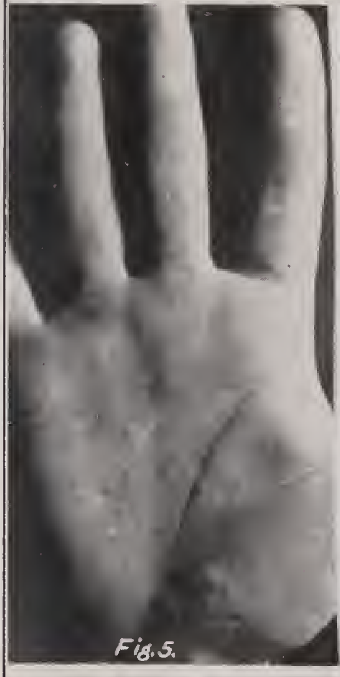

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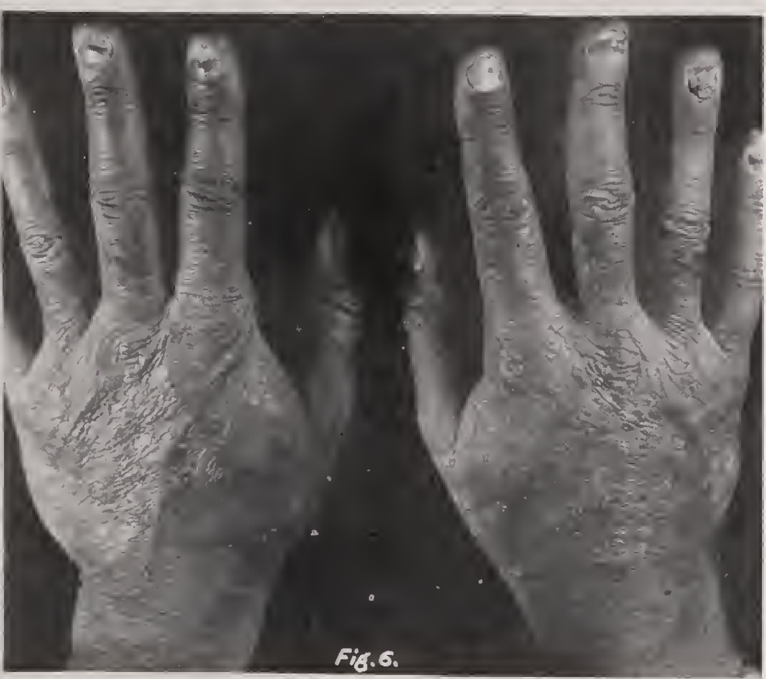

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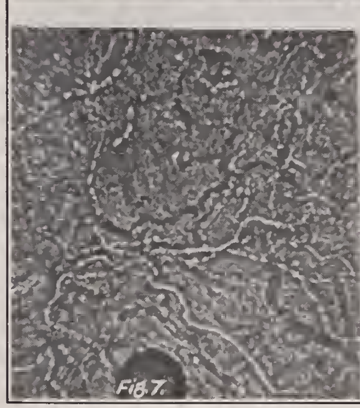

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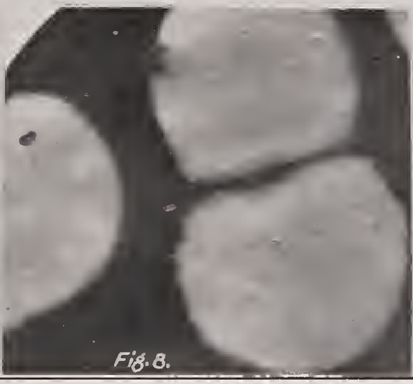

Fig. 8.

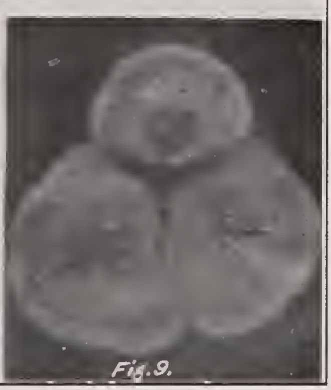

Fig. 9.

Fig. 1. Intertriginous lesions between toes. A few ruptured vesicles on dorsal surface. Fig. 2. Hyperkeratosis of plantar surface. Fig. 3. Scaling lesions of buttock and thigh. Fungi found in detached scales. Fig. 4. Vesicular eruption on dorsal surfaces of hands. Fig. 5. Deepseated (dyshidrotic) vesicles on palmar surface. Fig. 6. Epidermophytosis of nails and glabrous skin. Fig. 7. Mycelial threads from diseased epidermal scrapings. Fig. 8. A twelve days' growth of fungus on maltose agar. This white growth was found in eight out of nine cases. Fig. 9. A twelve days' growth on maltose agar from hyperkeratotic epidermis of plantar surface. (This unclassified fungus was found in one out of nine positive cases.)

ency to grouping and in practically all cases are to be found in the interspace between the fourth and fifth toes. Owing to the close apposition of the fourth and fifth toes, plus the friction and constant moisture, the roof of the vesicle quickly macerates, showing a whitened, sodden epidermis that may be detached from a dark red, dry base. On the arch of the foot the vesicles are well preserved; they are deepseated and tend to group occasionally, becoming confluent. The vesicles here have a sago-like appearance and often show a central bluish color; their contents are resorbed when they are situated under a dense corneal layer, and they tend to rupture where the corneal layer is thinned. In either event there is a dessication of the roof of the vesicle. On the ball and heel of the foot, where the corneal layer is exceptionally thick, the underlying vesicles cannot be discerned, and the constant irritation of continuous vesication with the intermittent pressure subjected to the part produces a hyperkeratosis of variable degree. When this hyperkeratosis is pronounced, it is comparable to a true callositis (corn), causing pain or discomfort in walking.

Infections of the hands are perhaps next in frequency of occurrence. In my experience many of these cases are indistiguishable from acute, subacute or chronic eczemas, and microscopic finding of the fungi is often necessary to determine the correct diagnosis. The hand lesions show the polymorphism of an ecezma, exhibiting at times erythema, vesicles, weeping and infiltration. Itching is not as constant and variable as in true eczema. The affected areas in epidermophyton affections are, however, more circumscribed and predilect the sides of the fingers. The erythema is less pronounced, the vesicles are larger and persist longer before erupting than in true eczema. The papule and pustule, which are generally a part of the picture of acute eczema, are usually wanting in the fungus infection of the hands. The chronic, thickened palmar fungus infection resembles a chronic palmar eczema or a scaling syphilide in many respects, but does not tend to involve the dorsal surfaces. Occasionally we find an acute, deep-seated, vesicular eruption in the palmar surface. Sometimes the vesicles group and coalesce, showing bullous lesions without objective inflammatory signs. In such cases the vesicle contents are absorbed, leaving a dark brown, pigmented spot that slowly undergoes dessication.

The next site of frequency of the disease is the crural region, then probably the axillae. In both of these regions the affection is very similar, altho involvement of the axillae is much more rare. As before mentioned, Hebra first described the disease in the crural region, giving it the name of eczema marginatum. Later, when its fungus nature was clearly established, the name was changed to "tinea cruris" or "tinea trychophytosis cruris," as it was assumed that the causative fungus was of the megalosporon variety of the trychophyton group. So the disease in the crural region is erroneously designated as a trychophyton instead of an epidermophyton infection in most of the modern text books of dermatology.

The implanation of the fungus in the crural and axillary region, as in the toe interspaces, is rendered easy by the heat, moisture, and friction in the crural and axillary folds, causing an intertriginous erythema. The primary lesion may be a macule, papule or vesicle, usually situated on the left crural region. The lesion or lesions, whether macular or papular, spread peripherally, forming rings or sectors, varying from the size of a penny to that of the palm or larger. They may extend to the other thigh, to the pubes and lower abdomen, or follow the perineum, involving the intergluteal folds to the sacral region. The borders of the rings are not raised if the condition is macular; if it is papular or vesicular, the borders are clearly raised and may appear irregular or clear-cut. These borders are made up of papules or ruptured vesicles, showing brownish crusts and in such cases are decidedly inflammatory, the parts within the rings varying in color from a yellow or yellowish red to dark brown. The disease may spread beyond the mentioned localities, altho it is usually limited to the region between the scrotum and thigh.

The affection is, of course, aggravated in hot or tropical climates which is due to the epidermophyton being complicated by the common pus infections. In tropical climates this condition is known as the "Dhobie" itch. While this description applies to the ordinary cases, we may have involvement amounting to lichenification, in which the affected areas show only flat-topped, angular papules, comparable to a lichen simplex chronicus. This condition may result from scratching the areas, or perhaps from a too intensive treatment with irritating drugs.

On the abdominal and sacral region the skin simulates a dry seborrheic dermatitis, or more properly a pityriasis corporis; the areas are sharply marginated, decidedly erythematous and covered with a thin, easily detached, papery scale.

I have under my care at the present time a patient with the affection localized to the crural and axillary regions, and the bald scalp. The scalp affection is palm-sized and located on the vertex. The patch seems decidedly infiltrated, and is sharply marginated. The color is dark red and tends to fade to yellowish red or salmon color at times. This changing of color in the scalp lesions seems unusual and may be characteristic of the disease in this location. The diseased area is covered with closely attached thin, dry, grayish, papery scales.

The inframammary region is often involved and it is generally regarded as an intertriginous eczema; the affection here simulates the crural and axillary condition. The eruption may be macular, macerated or papular (lichenified), and is often complicated by pyogenic infection.

Diagnosis of nail infections with the epidermophyton is difficult. In two cases under observation, I found no appreciable change in the nail bed, tho the organism was present. The nail plate was normal, except the distal end which was very friable, laterally split, and tending to break off. Inflammatory symptoms were absent in both cases. There are no recorded cases of hair involvement by the fungus.

The fungus of epidermophytosis differs from other ringworm fungi in that it does not affect the hairs nor produce suppuration. Moreover, in fungi which invade the hairs spores are abundant, whereas in the epidermophyton infections they are rarely observed in the tissues removed for examination—at least, this has been my experience.

In the tissue scrapings from lesions produced by the parasite the fungus appears under the microscope as a network of mycelial threads. The threads are of uniform thickness and highly refractile. Branching takes place at right angles, and under the high power objective distinct septa are observed with segments of varying lengths, in places short and bead-like, in others, longer. In the squames or tissue scrapings of the intertriginous type in particular, the mycelial threads are short and very tortuous. No spores have been observed in the tissues by us, altho there can be no doubt of their existence in the tissues during the quiescent period of the disease, and by virtue of this characteristic, the life of the organism is preserved until a more favorable environment obtains.

In searching for the fungus in tissue scrapings, it is advisable to select the specimen from the more active parts. The roof of a vesicle is excised by a Graefe knife and placed upon the slide, inverted, and immersed in a solution of potassium hydroxide, and covered with a cover-slip (Whitfield). The slide may be heated gently over the flame, but usually this is not necessary. Before examining the specimen, the cover-slip should be firmly pressed down to insure a thin film.

CULTIVATED AND ISOLATION

The fungus grows readily on the simpler culture media, but for purposes of identification Sabouraud's maltose agar is employed. The fungus prefers a moist atmosphere, and its optimum temperature is between 20 and 25 degrees C.

We have noted in some cases a growth of ærial hyphæ in forty-eight hours after inoculation, but in most cases the growth is not visible until about the fifth day. The colonies grow rapidly after they have attained a diameter of 1 cm. In form they are disc shaped, and covered with a fine white duvet, which in young cultures is long and tenacious; in old cultures short and powdery. In the center of the disc the growth is elevated into a central tuft, and, as the diameter increases, concentric rings or bands are formed at the periphery. The edge of the colony shows a fine fringe, made up of the projecting mycelial threads or hyphae. The surface is white, but in the deeper portions of the central zone the color is deep yellow to orange.

In a series of seven positive cultures from a group of twelve cases, showing the fungus in the scrapings, we have isolated and identified six epidermophyton inguinale and one other, as yet unidentified, fungus. The unidentified growth has a dark-gray to violet color, showing radial wrinkles and gullies. Hanging-drop preparations from the culture show numerous interlacing hyphae and branching filaments and spores. In young cultures the spores are few in number, but after a few weeks' growth, they are numerous and have a tendency to obscure the mycelium. They lie in cluster. The mycelial threads are pleomorphic, showing thin filaments of varying lengths and verrucose threads which have a beaded appearance.

The most effective treatment of epidermophytosis is at the present time problematical. Many writers proclaim excellent results or an established cure of the disease with their own selective therapeutic agents. Others, with equal experience, despair of the situation and are on the alert for true specific therapeutic measures. At any rate, it is astonishing to find such divergent views concerning the choice of treatment and varied results obtained in this disease. To those proclaiming an easy cure of the affection it may be said that the disease, while not altogether capricious, tends to be latent or symptomless eight to ten months of the year. At least this condition seems to obtain in the upper Mississippi valley.

The fact that heat and moisture are necessary to an exacerbation of the disease makes it more active, if not more prevalent, in the spring months from May to July. From July to November it is much less active and many severe cases are quiescent during this period. Whether this is due to immunologic conditions or to the desquamating process occasioned by irritant fungi I do not know. With the necessary change to heavy clothing or woolens in November and December the infection is again in evidence with pronounced objective and ofttimes subjective symptoms. Here, again, heat and moisture become a factor and either light up the latent infection or render conditions more favorable for the growth of the fungus. From December to April it is again quiescent in the great majority of patients.

The treatment of this disease is difficult irrespective of duration or location, and the treatment must by symptomatic like that of any acute or chronic inflammation of an eczematous nature. If strong irritants are applied in the acute stage, the patient will likely be rendered very uncomfortable or bedridden. On the other hand, if mild applications are applied in the chronic, latent or hyperkertotic stage little or no benefit will be obtained. The principle of correct and curative treatment consists in desquamating the diseased epidermis, keeping the regenerated epidermis fungus-free, and at the same time keeping the patient fit for duty without too much discomfort.

Bearing in mind that this disease is occasioned by a fungus situated in the epidermal tissues and acting like any foreign body therein, it is plain to all of us that we must keratolize or soften and remove this diseased tissue. If the disease is localized to the feet and acute enough to cause discomfort, a diachylon ointment may be applied. This will further soften the thickened epidermis without irritating the parts. After two days of this application the diseased epidermis, whether interdigital or vesicular, may be removed by soap and water and rubbing with a rough towel. Please bear in mind that the diachylon ointment is in no way a parasiticide; its use is solely for facilitating the removal of the dead epidermis. This being accomplished, the reddened base, now freed from its sodden covering, may be painted with a 20 per cent silver nitrate solution or a 10 per cent tinct. of iodine in alcohol. The silver nitrate induces a further shedding of the viable epidermis which contains many fungi. The 10 per cent iodine solution effects the same changes and should have a better parasiticidal effect. I personally prefer the silver nitrate solution, as its penetrating effect, causing a silver albuminate, is uniform and it will not cause a dermatitis as readily as the iodine solution. After the silver nitrate or iodine application, we may use to advantage the now well-known Whitfield ointment, which is made up as follows:

Salicylic acid	2.0
Benzoic acid	4.0
Vaseline or benzoinated lard	30.0

If the condition is not too acute, the skin will tolerate this ointment; if too acute, the vaseline or lard base must be increased. This ointment has a keratolizing effect by virtue of the large amount of salicylic acid and a parasiticidal effect due to the benzoic acid. After applying the ointment for three days, the excess should be wiped off, the skin cleansed with benzine, the silver nitrate reapplied, and followed by another three days' treatment with Whitfield's ointment. The above mentioned treatment should be continued until a healthy fungus-free epidermis is formed. Then, to prevent recurrence, a 15 per cent solution of sodium hyposulphate or a 1-5,000 permanganate of potash should be used as a daily foot bath for the following two months. Needless to say, all wearing apparel directly touching the diseased parts, as well as the shoes, should be sterilized.

The above outlined treatment applies only to the vesicular and intertriginous types of the disease. The hyperkeratotic type, affecting the ball, heel and palmar surfaces, requires additional measures and, in order to facilitate a cure, the hyperkeratotic epidermis should be pared as thin as possible and a 40 per cent salicylic acid plaster continuously applied and changed every third day. The dissolving or keratolytic effect of the plaster will thin the thickened epidermis to a normal thickness in from two to eight weeks when the above outlined treatment may be applied to the parts. Some writers recommend a 2 to 10 per cent ointment of pyrogallic acid or chrysorobin in place of the Whitfield ointment.

In the treatment of the affection of the crural, axillary, inframammary, and glabrous skin, the above outline, excepting the use of the salicylic acid plaster, will be found helpful and often curative. Ordinarily the Whitfield ointment should be weaker, and care should be taken not to overirritate the parts. As earlier mentioned, the crural and axillar regions occasionally take on a thickened, lichenified condition if over irritated. This condition is, I believe, best combatted by the daily application of pure crude coal tar, as suggested by C. J. White, or his C. A. T. mixture, which is as follows:

Collodion
Acetone
Crude coal tar aa 20.0.

To be painted on the affected patches daily for four days, allowed to peel, and repainted.

Dr. E. Wood Ruggles, of Rochester, N. Y., recommended the following treatment, and its benefits have been attested to by others. The following ointment is applied twice daily:

Zinc oxide	6.0
Tar ointment (ung. pix liquida)	12.0
Phenol	1.0
Rose water ointment	18.0

The feet are washed three times a week with tar soap. When the acuteness subsides the following lotion should be applied daily until the skin appears normal, and continued once or twice weekly as a prophylactic:

Salicylic acid	1.3
Tannic acid	6.0
Alcohol	60.0

or

Tincture iodine	4.0
Spirits of camphor	28.0

These lotions should not be applied when the skin is acutely inflamed or fissured.

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Standardization of Clinical Laboratories. In order to have a definite plan to work on, Josiah J. Moore, Chicago (Journal A. M. A., Sept. 9, 1922), says that a set of requirements for laboratories has been prepared and submitted to a large number of laboratory directors and pathologists, and from their comments and suggestions the following general standard requirements for clinical laboratories may be submitted: (1) The director of a clinical laboratory should be a medical graduate. (2) All interpretations of laboratory data should be made by doctors (of medicine, philosophy or public health) who are specialists in the branch of work to which the data pertain, i.e.: (a) Serologic, bacteriologic and chemical interpretations should be made by doctor who are trained serologists, bacteriologists and chemists. (b) Tissues diagnosis should be made by doctors of medicine who are experienced pathologists. (3) Technical procedures (methods) used in an acceptable laboratory should be the best available. (4) The equipment of an acceptable laboratory should be such that the proper technical procedures may be carried out. There should be ready access to current scientific books and journals. With reference to these suggested requirements, the following statement is made: (1) The director of a laboratory should be able to act as consultant in evaluating for his clients the various laboratory reports and in correlating them and other clinical data. (2) Many technical methods—most of them, perhaps—may be satisfactorily carried out by technicians. The data derived by such methods, however, should be interpreted by specialists. (3) If it is insisted that only the best modern methods be used in a laboratory it follows that the technicians employed must be trained in these methods. (4) Clinical data and other pertinent information should accompany the submission of specimens or other material to the laboratory.

THE ABDOMINAL SIGNS AND SYMPTOMS OF THORACIC DISEASE*

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I have selected this topic today for the reason that I have found the subject a particularly difficult problem in my own practice and especially for the reason that it is a topic of equal importance to both surgeon and internist. In my discussion I shall not attempt to go extensively into the question of differential diagnosis, merely in passing referring to certain of the more outstanding facts, for the reason that, did I attempt to discuss the matter thus in any considerable detail, I should be unable in the limited time at my disposal to mention much of the material which seems to me of great importance. My purpose is more to call your attention to the subject, its great difficulties, and to beg you to hold it well in mind, when differential diagnostic problems involving this question appear in your practice.

It is also quite impossible to interest ourselves today to any considerable extent in the most fascinating questions involved in the explanation on a physiologic basis of this confusion of signs and symptoms in thoracic and abdominal disease, again, because of lack of time. Nor do I find it possible to generalize in my conclusions to any definite degree, even as regards the principles of differential diagnosis, for the reason that these cases are notably individualistic and the subject does not in the present state of our knowledge permit of much generalization.

Every active clinician, be he surgeon, internist or that happy combination of both, the general practitioner, is well aware of the fact that all too frequently striking abdominal signs and symptoms appear as an evidence of thoracic disease. In a very considerable number of these instances the point in question is one involving acute surgery and, therefore, the differential diagnosis is of most critical importance. Oftentimes also the condition is such as not to permit of long delay, such as might be required for laboratory and radiographic study in differential diagnosis. The clinician is, therefore, called upon frequently for prompt decision in a condition which admittedly may demand extended study for a fully scientific differential diagnosis.

I think we shall all agree that the most frequent instance of this confusion with which we meet is in the differentation between an acute appendicitis and an acute pleurisy. It is well known to all of us that an acute pleurisy, especially one of the right base, may appear with no symptoms other than the presence of localized tenderness and rigidity in the right lower abdominal quadrant. This same symptom-complex may also appear when the left pleura is involved, but of course with less frequency, and also it is a much more frequent occurrence when the pleurisy involves, perhaps exclusively, the diaphragmatic pleura. Pleurisy of this location, partly because of the proximity of the liver dullness, is in itself a very difficult diagnosis to make, even when no signs or symptoms of abdominal disease exist, and it is very easy to fall into the error of a diagnosis of an acute appendicitis, to urge operation and to lose the patient from a pneumonia. True, one may solace himself by the assumption that the pneumonia was a postoperative one, or due to a pulmonary embolism, which occurs with considerable frepuency in abdominal operations, but in his own mind, if he be thoroly honest with himself, is the great question if the primary error was not in diagnosis.

The very same difficulty is experienced in pulmonary abscess, especially when of the right lower base, in bronchopneumonia, pulmonary infarct and in pulmonary neoplasm, especially one which involves the diaphragmatic pleura. I have found it of tremendous assistance in cases in which these questions arise, to make a fluoroscopic or x-ray study of the area, of course in addition to a very careful physical examination. Whenever in doubt in such an instance, it is quite certain that the thing to do is to wait until positive evidence of some kind appears, even tho it seems to imperil an increased surgical risk. A very helpful and important differential point is often found in the respiratory rate which will be found ordinarily increased in the thoracic lesion and not so in the straight abdominal one. Temporary fixation of the lower right thorax by the hands may also cause the relief of pain on respiration in the pleural lesions. One must always be very suspicious of an abdominal pain which is greatly intensified by the normal respiratory movements.

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There are also many other important signs of differentiation which will occur to the experienced clinician, but it is quite astonishing how frequently the pathologist will find that the signs have failed and a serious diagnostic error has resulted. In this regard I desire to report now for the second time a case in point on which I signally failed.

The patient was a vigorous young business man who gave a history indicating a very long standing chronic appendicitis. This had been the diagnosis of his family physician and operation had been delayed because of business and social matters thought to be of more insistent nature.

When I was called in consultation it was because of an apparently acute exacerbation of the old symptoms. He had been running a fever for twenty-four hours. There was a polynuclear leucocytosis, typical abdominal signs and symptoms, and incidentally a very annoying cough with accelerated respiration. Thoracic pain had developed in the right lower thorax. The surgeon had demanded consultation with an internist before operating because of a possible diagnosis of liver abscess, for the patient had in addition now developed acutely a slight jaundice.

After going over the case I found an area of dullness with absent breath sounds in the right lower thorax. A diagnostic tap showed the presence of a thick fetid pus containing pneumococci. The rigidity and tenderness was undeniably also present in the right lower abdominal quadrant but my colleagues agreed with me that the probable condition was an old empyema. The patient was removed to the hospital, the diagnosis of empyema confirmed by x-ray study, and the thorax was promptly drained as the condition of the patient was steadily becoming worse. He failed to respond satisfactorily after the relief of a large amount of pus from the pleural cavity, and after a few days he died.

An autopsy was secured and the pathologist found an old appendical abscess, probably of very long standing, which had drained upward postperitonealy, finally infecting the pleural sac and so causing the empyema. The jaundice had been caused by enlargement of a lymph node compressing the common duct. There was no liver abscess. As I review the case, I still fail to see on what grounds, should a similar instance come my way, I would be likely to have changed my diagnosis.

Not only do acute pleural inflammations cause abdominal signs and symptoms of this character but chronic ones as well. Pleural adhesions, especially when located in the right lower thorax, produce also most confusing abdominal disturbances, and in several cases under my observation pleural adhesions, neoplasms of the lung or pleura, tuberculous processes and infarctions have been very largely manifested by abdominal pain and rigidity and even by abdominal tenderness, when operation or postmortem showed no abdominal lesions present. One must be particularly careful to exclude central pneumonic processes in many instances of apparently obscure peritoneal disease.

What has been said of the appendix and of symptoms and signs of the right lower abdominal quadrant in certain thoracic lesions, applies with quite equal force to signs and symptoms which appear also in the right upper abdominal quadrant, also caused by similar thoracic lesions Acute choleocystitis, gall-stone, duodenal ulcer or duodenal adhesions or neoplasm are not infrequently diagnosed in chronic pleurisy, acute pleural exudates, neoplasms, infarction and in acute pneumonias. Fortunately our great reliance on x-ray findings in this region now-a-days has in this respect largely safeguarded operative mistakes to a degree, much as they may have led us astray in some other respects.

It is not, however, in the chronic conditions that one is most likely to commit serious errors in this respect; it is in the acute ones, and the more experienced the clinician the more he is likely to worry and ponder over the acute conditions of this kind.

What, then, are we to advise in these cases which develop acutely, simulate an acute inflammatory surgical lesion of the abdomen, and yet give rise to a strong suspicion of an acute pleural or pulmonary process? My experience has led me to feel that the wisest procedure is to wait until differentiation is possible. The ice bag may be applied to the tender and painful abdomen, the patient may be elevated in bed, so tending to localize any suppurative process should it develop and, after the advice of the older clinicians, in what we may speak of as the presurgical era, we may give opium. The abdominal inflation, and to some extent the pain, may be relieved by the giving of high colonic irrigations, but never in these cases should we give the active cathartics, even tho we feel reasonably certain that the basic lesion is a developing acute inflammatory process in the lung or pleura.

Tho one will certainly lose some cases thru such a procedure, in by far the greater number, in case of mistake and neglect of a surgical abdominal condition, subsequent drainage will at least save the life of our patient, but when the opposite procedure is followed out the surgeon is certain to lose many cases from his overzeal. He may, of course, solace his soul under the diagnosis of a postoperative or anesthetic pneumonia, but he is not going to increase either his own self respect or the confidence of the public in surgery.

In a correct valuation of these cases as they occur, one must take full cognizance of the numerous cases of pulmonary infarction after abdominal disease and operations, especially in appendectomy, choleocystectomies, colotomies and the like. The pathologist must not be thought to be infallible in his conclusions, however, particularly as to the sequence of disease processes.

Even more frequently than abdominal symptoms mask pleural and pulmonary disease do they obscure the early detection of cardiac disorders of various sorts. Most of these cases enter the police blotter, the public press, and to a considerable extent the ambulance record, also under the heading of "acute indigestion." Years ago, when I was doing a large number of autopsies, a considerable number of which were on coroners' cases, I was struck with the comparative rarity with which such cases were found on autopsy to be really instances of disease of the abdominal viscera.

Among the more common thoracic lesions so found were myocarditis with rupture of the heart, cardiac aneurism, coronary thrombosis, acute myocarditis, acute cardiac dilation from any cause, syphilitic myocarditis, acute or chronic pericarditis with or without effusion and the like. Not only did such diagnosis include many forms of cardiac disease but also aortitis, aortic aneurism and acute mediastinitis from any cause whatever.

It was also very striking that in many instances, in which the history showed but an acute onset of the symptoms, pain in the epigastrium, vomiting, collapse and shock and the like, postmortem examination showed the causative thoracic lesion to be definitely chronic in character. In very many instances the only acute thing about the case is the onset of symptoms. It is by no means rare for a myocarditis or a cardiac aneurism of very long duration to suddenly terminate with a rupture which gives origin to almost exclusively abdominal symptoms and signs such as would be expected in the perforation of an acute gastric or duodenal ulcer or in an acute perforation of a gall-bladder.

It is even more frequent, however, for the physician to obtain a long standing history of a chronic indigestion, gastric flatulence, hyperacidity or achylia gastrica which on close examination is found to be entirely due to some cardiac defect of long standing. Such is the history in a good many instances of angina pectoris, for example.

Angina pectoris is more than commonly chiefly manifested by abdominal symptoms. It may appear only when the gastrointestinal attack is simulated, as when the stomach and intestine are overladen with food, when exercise is taken on a full stomach, and so on. Several times I have seen cases in which attacks of acute abdominal pain, supposed to be instances of pancreatic or messenteric angina, have been found postmortem to have terminated with an acute coronary thrombosis or with cardiac rupture. As a rule in such instances a careful general examination would have disclosed marked arterial changes which would have justified us in expecting, if not in actually diagnosing, a true angina pectoris. In fact, it is no statement far from the truth to say that acute indigestion is usually due to thoracic rather than abdominal disease.

Mediastinitis from whatever cause is also very likely to be largely, often chiefly, manifested thru abdominal symptoms. Nausea, vomiting, dyspnea, gastric and intestinal flatulence and pain which is chiefly referred to the epigastrium.

Another form of thoracic disease, which is very frequently chiefly obvious because of abdominal signs and symptoms, is seen in many of the diseases and disturbances of the esophagus. This is notably the case in esophageal spasm, in which the diagnosis is more than commonly that of a pylorospasm, cancer of the esophagus, certain cases of diverticulum and so on. When the lesion is chiefly of the lower third of the esophagus, it will be found that as a general rule the symptoms are referred downward, and if pain is present it will be usually chiefly located by the patient at the epigastrium. This is notably the case with ulcer of the esophagus. Of course, once the physician's attention is attracted to the possibility of this error in diagnosis, fluoroscopic or x-ray studies with an opaque meal or the study of the act of deglutition will usually set the diagnosis straight.

Messenteric, splenic, pancreatic or renal infarction is not so very frequently the first striking sign to attract the attention of the physician to the presence of an endocarditis which may have been of very long standing, and very commonly in such cases pulmonary infacts will be also found to be present.

Every physician is familiar with the type of onset of chronic ulcerative pulmonary tuberculosis which has been so long described as of the gastrointestinal type of origin. Osler gives especial attention to this form of onset in pulmonary tuberculosis, and it is among the most frequent types of onset. Every gastrointestinal clinic is constantly seeing these cases and it is one of the most common of diagnostic mistakes, for often the onset and course have been almost exclusively with abdominal and gastrointestinal signs and symptoms. The diagnosis is very likely to range from anything from achylia gastrica to acute perforating gastric ulcer. I was recently called in consultation with a surgeon to decide the point as to whether a case of acute gastric hemorrhage, following a long standing history of gastrointestinal disturbances, should or should not be operated upon. I found the patient very much exsanguinated and in quite desperate condition, but examination of the chest showed an advanced pulmonary tuberculosis with extensive cavitation and the supposed gastric hemorrhage had taken place from one of these large cavities. The family doctor stated that the patient had had no cough, that he had complained of no other smptoms than such as are usual in gastric ulcer of the chronic variety. The doctor, however, confessed that he had never felt himself called upon to examine the chest. The patient shortly after died from an active pulmonary tuberculosis. So very frequent are these cases that in every chronic case of gastrointestinal disease a thoro examination of the chest should be made and, whenever any doubt still exists, the physicial examination should be followed up by x-ray or fluoroscopic study of the chest.

As in the case just cited, a hemorrhage may be the very first indication that we are dealing with pulmonary instead of an abdominal disease. Certainly no instance of chronic digestive disturbance should be submitted to laparatomy until the chest has been very completely examined with the special view of excluding pulmonary tuberculosis.

Not only is this true of chronic ulcerative pulmonary tuberculosis, but in acute milliary tuberculosis also the pulmonary signs and symptoms may be held much in abeyance and the symptoms of gastrointestinal disease exaggerated. Of such are the types of milliary tuberculosis classed as of the typhoid type. Every internist and general practitioner is perfectly familiar with the considerable difficulty of differentiation between this condition and a true typhoid fever in many instances.

Still another general disease which often gives striking abdominal symptoms, while the lesion producing the symptom is wide distant, is tabes dorsalis. Of course, when the knee jerks are absent, the pupils fixed and Romberg present, there is little likelihood that the typical girdle or gastric crisis pains will be taken for anything but what they are, an evidence of luetic disease of the cord and spinal ganglia, but it must be remembered that few cases show all these characteristic signs until late in the disease, and it is very frequently that the physician meets with cases, in which little definite may be found except, perhaps, the presence of severe abdominal pains which indeed may present very few of the typical girdle-like symptoms or characters.

More than seldom such cases have been operated upon under the diagnosis of duodenal or gastric ulcer, duodenal adhesions, and even for gall-bladder and appendix disease. In passing, however, I wish to state that in three instances under my observation, all undeniably leutic, severe lancinating abdominal pains were assumed to be tabetic, when they were found at autopsy to be caused by ulcer in two instances and by gastric carcinoma in the other.

Doubtless most of you feel that, altho I have presented the difficulties and pitfalls of differential diagnosis in which abdominal signs and symptoms veil or hide thoracic disease in many instances, I have given relatively little to assist in the differential diagnosis. I have designedly omitted this phase of the subject for the reason that, had I attempted to consider differential diagnosis in anything like a thoro manner, time would have permitted me to consider but one or two of the instances mentioned. It is my purpose rather to attract your attention to the subject as a whole and to leave it to your own ingenuity to work out the steps of differentiation. No general laws or rules may be laid down, and in most instances each case must be intensively individualized.

To emphasize then, again, my purpose, it is to attract your attention to the large group of lesions of the thorax which commonly or infrequently may produce abdominal signs and symptoms, capable of misleading the physician thru the great preponderance of abdominal signs. I wish also to particularly call your attention to the absolute necessity for careful examination of the thorax in all instances, even tho the signs and symptoms apparently clearly indicate that the lesions are of abdominal location. This is especially necessary whenever the question of operation is brought up. If the physician adopts such a rule, he will but very seldom find himself committing serious errors, even tho differential diagnosis in most of these instances is extremely difficult. The physician must also bear in mind that, altho thoracic lesions capable of explaining abdominal symptoms may be found in any case, this is not necessarily proof that such lesions are really fully responsible, for both associated thoracic and abdominal lesions may be found in a single case.

In such cases involving the question of emergency operation it is often a very difficult matter for the internist to keep his head and not to have his judgment swept aside in the face of a possible surgical emergency. My most frequent regrets in the past have, however, been that I did not hold out until the diagnosis was clear. In several instances vividly present in my mind I have permitted operation, where, had I held out vigorously for a few hours or until more conclusive evidence could be furnished, the patient would have been spared an unnecessary and frequently fatal operative procedure. As I have before stated in such instances, I feel that it is far safer, at least for the patient, to hesitate before operation rather than to regret after it.

TRAUMATIC NEUROSIS*

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It is not my purpose to present a long and tedious paper upon a subject that lacks a great deal of the everyday points of interest which frequently come to the attention of the general practitioner, nor will I burden you with a lot of theories which are not applicable in the treatment of a condition frequently met and labeled under the caption of traumatic neurosis. Whether traumatic neurosis is a nerve or psychic tire is of little consequence from the patient's standpoint. The most important question with the patient is normal health and the quickest way to attain it.

As the word traumatic neurosis implies, there are two principal factors. The first is traumatism with its multitude of symptoms, such as pain, laceration of the tissues, swelling, broken bones, unconsciousness, etc. While the second part of the word involves a variety of symptoms which may be objective or subjective but later on develop into the typical subjective symptoms which cannot be elicited by the examining physician. It is indeed of vital importance to be able to make a differential diagnosis between the true symptoms subsequent to traumatism and imaginary symptoms which we are going to discuss briefly in this paper.

In order to simplify the paper and bring it more quickly to the point I will cite a case of traumatic neurosis, following a head injury and the method of treatment used in this particular case, bearing in mind, however, that there was no compensation or suit for damages pending.

Male, white, age 33, fairly well nourished, giving the following history which was substantiated by his wife as she had learned it from his parents. In July, 1900, when the patient was eleven years old, his mother asked him to close the screen door, which was banging during a wind storm. As he leaned out of the door to close the screen, he rested his forehead on the door-jamb and at the same time the wind blew the heavy door closed which struck him on the occiput, fracturing his skull and rendering him unconscious for twenty-six hours.

He was taken to the hospital and a plate of bone about one inch in diameter was removed from the occipital region and a silver plate placed over the trephine opening to protect his brain from future injury. He states that he has never been quite normal since the operation, living in constant fear that a slight injury in the region of this silver plate might be extremely serious. He also stated that he would ride a distance of one hundred miles on the train (riding on a pass, being an employee of a R.R. Co.) to a certain barber who could cut his hair without hurting his head. The occipital region of his head has at all times been extremely sensitive, which has kept him constantly on the alert to protect his brain from traumatism.

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Feb. 9, 1922, while coming up from a cellar a trapdoor fell and struck him on the back of the head over the region of this silver plate. This traumatism did not render him unconscious but he has been in a daze ever since the accident, this dazed condition being worse in the afternoon, especially during the hours between four and seven p.m., and is associated with a considerable amount of pain in the back of his head. A short time after this last injury he consulted a physician in Ogden who examined his head with a powerful light and told him the plate had been dislodged about one-half inch and should be replaced by operation at once or insanity or death would be sure to follow within the next six months. The wife states that since this last examination his condition has been much worse, he becoming completely unconscious at times, and he is extremely restless and unable to sleep.

Physical examination. It was impossible for me to examine, with any degree of satisfaction, the back of the patient's head, owing to the fact that the slightest palpation produced such excruciating pain that it was impossible for me to elicit any abnormality of the skull, finding only a scar about one inch long over the central portion of the occiput. Ear drums were normal, nose and throat clear, no anterior or posterior cervical glands, heart and lungs negative, abdomen and extremities negative. The pupils reacted both to light and distance, and the eye grounds showed no abnormal changes. With the exception perhaps of a slight dilatation of the smaller retinal vessels, the nerve head was clean cut, showing no evidence of papilloedema. The abdominal and patellar reflexes were active but normal. Kernig, Babinski, Oppenheim, and ankleclonus were negative.

When the patient got off of the x-ray table after taking stereoscopic radiographs of his head he had a typical cacatonic spasm which lasted for at least sixty seconds, he in the erect position, the right hand grasping the side of the table, eyes staring straight ahead, the body in a complete state of rigidity. When he recovered from this spell his first remark wwas, "I guess I'm all right now." The cerebrospinal fluid pressure was 9 mm. of mercury at lumber puncture, which is within the limit of normal, the fluid cell count was normal, and Wassermann negative.

Treatment. While the x-ray pictures were being developed I showed the patient a number of skull pictures, some with foreign bodies, some with linear fractures, some with trephine openings, some with bone-grafts, and a great many normal skulls, in order that he might be able at a glance to detect any foreign bodies, such as a silver plate, depressed fragments of bone or a trephine opening if it were present in his own plates. When the plates were developed and still wet, I showed him his own plates which were absolutely normal, revealing no depressed fracture, trephine opening or foreign bodies such as a silver plate. To say the least he and his wife both were very much surprised to learn the truth in regard to his real head condition. With the knowledge that there was no defect in his skull I was able to examine the occipital region of his head as carelessly and roughly as I desired without causing the slightest amount of pain.

The patient's facial expression completely changed, a miracle had been performed, he was now a well man and able to combat the vicissitudes of life as any other normal individual without the handicap of only a part of skull to cover his delicate brain. While coming to my office by auto a distance of about eighteen miles, it was impossible for the driver to make over ten miles an hour as the jar of the machine caused extreme pain in his head. On the return home he informed the driver that he could drive as fast as he liked as the pain in his head was entirely gone.

I am informed that he is working every day, his appetite good, sleeping normally, and gaining in weight. It is my firm belief that in treating a case of traumatic neurosis, where money is not a contingent factor, all the physician can do is to present to the patient a sufficient number of facts which he can put together to build up a sufficient amount of substantial evidence to prove to himself that the present symptoms from which he is suffering are the subsconcious memory of a reality that once existed or a false idea that a condition is present which does not exist. Therefore, in the treatment of traumatic neurosis it is the physician's duty to present a sufficient amount of positive evidence and let the patient decide his own case.

810 Morgan Building.

Calcium and Phosphorus Metabolism in Patients With Fractures. Frederick F. Tisdall and Robert I Harris, Toronto (Journal A. M. A., Sept. 9, 1922), have endeavored to determine whether some of the fundamental principles which apparently apply to the deposition of bone in rickets also apply to the deposition of calcium salts in the union of fractures. While they have not solved the problem of deposition of bone in fractures, they have found that certain definite and important changes in the inorganic metabolism of the body almost invariably accompany the process of bone repair. They found the inorganic phosphate content of normal serum from birth to 20 years of age is remarkably constant. At this age it drops sharply to a lower concentration, and is again remarkably constant at this lower level throughout adult life. The drop in the phosphate content of the serum at the age of 20 corresponds to the period of cessation of bone growth. During the period of union of fractures in adults, the phosphate content of the serum is raised to a level approximately the same as that present in childhood, i.e., the period of active bone growth. There is a close parallelism between the concentration of inorganic phosphate in the serum, and the deposition of new bone, both during the period of growth and during the period of repair of fractures.

ONLY ONE MEDICAL PROFESSION

A. H. SAWINS, M.D.
SPOKANE, WASH.

It is unfortunate that the laity has so many strange notions and misapprehensions concerning the science of medicine and the medical profession. Especially is this true in the age of cults, pathies and pseudosciences. Therefore, in behalf of medicine and the medical profession, I wish to make a statement, which on first thought will seem to some bold and even questionable. It is this:

There is but one medical profession, but one school of medicine, but one medical science.

All cults and pathies which assume to cure disease or treat the sick are either doing so according to some of the principles of medicine and surgery, or they are pretending; and they succeed in their cures in proportion to their knowledge and application of true medical principles. In order to make plain the truth of this statement, the medical profession and the science of medicine must be defined and explained.

The medical profession is composed of a body of physicians, approximately 160,000 of whom are practicing in the United States alone, and this number does not include the auxiliary professions, such as dentists, veterinaries and druggists. Today, a physician is one who has received the degree of Doctor of Medicine (M.D.) from a school of regular medicine.

Medicine has been taught for thousands of years, very crudely at first of course, but for hundreds of years regular and systematic schools have been established by universities thruout the civilized world. There are something like ninety schools in our own country, all members of the national association of medical faculties, and all giving the required curriculum of study, which is not less than four years of nine months each. Requirement for admission to any of these medical schools is graduation from high school and at least two years of college work.

During the four years in medical college the student is taught in accordance with the accumulated knowledge and experience of hundreds of thousands of scientifically trained men, who are bound by no creed or medical dogmas, who follow no sect or individual, but rely on the accumulated experience and scientific investigations which the medical profession has acquired thru painstaking research.

Thousands of the brainiest men have devoted their lives, and millions on millions of dollars have been spent in sober and sincere effort to determine the truth in pathology, bacteriology, medicine and surgery, in an earnest endeavor to find out the best way to protect the health of the public, to relieve suffering and save human life. These facts, so far as it is possible to determine them, are what constitute the curriculum of the medical department of every university thruout the land.

There is but one school of medicine. There never has been but one school of medicine. There never can be but one school of medicine.

There is but one school of law, more would be ridiculous, but one school of civil engineering, or of any other science which is based on conclusions resulting from experience and scientific experiments.

Many self-styled schools of medicine have sprung up in the world from time to time, of which homeopathy is the most noteworthy example. This departure in medicine was established in 1790 by a physician of the regular school, named Hahnemann, who discovered a new principle of diagnosing by symptoms and treating with small doses of medicine, the potential energy of which he claimed to raise by dilution or trituration. Dr. Hahnemann proposed his new principle to the medical profession, and the profession found that it had virtue, but that Dr. Hahnemann's theory concerned itself chiefly with a theory of similars and the use of medicines in a peculiar manner, that it precluded surgery and many other essentials of medicine. Therefore, the medical profession, of course, could not adopt such limited principles as a basis for the whole medical science. To do so, as one writer expressed it, "would be to build a fence around the science of medicine which would shut out more than it would shut in."

Hahnemann persisted and established, what he was pleased to call, "the new school of medicine, homeopathy." This pathy grew to be very popular, and indeed still is, but its votaries no longer adhere to Hahnemann's principle.

For many years the medical profession would not countenance homeopaths professionally nor hold consultations with them. But today the homeopathic schools teach surgery and everything that the traditional medical schools teach, the only difference being a preference for the Hahnemann principle in materia medica and its use, but very rarely does a homeopath adhere strictly to this. Therefore, today homeopaths are accepted on an equal footing in the science of medicine.

There were about 15,000 homeopaths. Yet we hear but little about them excepting as physicians, for each is a member of the medical profession and practicing medicine, for the most part, in the regular way. This is better so, better for the homeopaths, better for the public and better for the medical profession. Further, they could not have attained to their present usefulness except by study and practice of the principles of regular medicine and surgery. It was impossible to progress in any other way. Bacteriology, pathology, medicine and surgery were the only means, and thru the study of these they naturally ran gradually back into the regular school of medicine, altho it took them more than a hundred years to do so.

Thus it ever has been, and so it ever will be with all the pathies, cults, mono-homo sciences and religion-healers. If they ever attain to anything like a scientific understanding of human ailments and the best method of treatment, they must do so along the channels of medical science. There is no dodging this conclusion.

This is self-evident, when we consider that medical science spares no money or pains to find out the truth regarding every claim put forth by any sect or individual along the line of medicine. No matter from what source it emanates, the traditional school of medicine invariably subjects it to a most rigid and expert investigation and research, to determine both practically and scientifically if it possesses virtues sufficient to warrant its adoption into the science of medicine.

We would be ignorant, indeed, if we imagine for a moment that the medical profession did not know the advantages and disadvantages of electropathy, hydropathy, christian science, osteopathy, chiropractic, naturopathy, or any cult requiring a descriptive adjective. In fact, the medical profession would be derelict in its obligations to the public, if it did not know the virtues and shortcoming of every cult and pathy. At first the success of these side lines in medicine depends upon the ignorance of the people, but ultimately they must stand or fall in proportion as they come to know and apply the scientific principles of medicine as taught in the regular schools.

In order to protect the people, laws have been enacted from time to time, and examining boards have been appointed to examine into the fitness of individuals to practice medicine, and this has had the good effect of raising the standard of medical education. The duty of these boards is solely to determine the applicant's education in, and fitness to practice medicine and surgery.

There is often a marked difference between an individual physician and the highest medical science. This is necessarily so, and the medical profession should not always be judged by an individual member. All writers are not like Shakespeare.

The medical profession possesses the best of everything and means known up to date, that will prevent, alleviate and cure disease. It is the best the world can give.

Such principles as the following will serve to designate medicine as a liberal and enlightened profession:

Whenever a physician discovers a new principle in medicine or a new method of treating or operating, which offers advantages to the patient, he at once gives it to the profession, so that the public may have the advantage of it, and he does this without any remuneration for himself. Not to do this would be unprofessional. Should a physician endeavor to profit by such a discovery, by patenting his discovery or advertising it to the public, he at once violates the code of medical ethics; he becomes what is known as a quack and is ostracized from the profession. There is but one way a reputable physician can profit by such a discovery, and that is by the honor of having discovered or invented something useful to the profession, and thereby helpful to mankind.

The medical profession has no quarrel with a member of any cult or pathy, provided only that he has taken the regular prescribed medical course of training and passed the test of a regular state board of medical examiners. He would then have a good working knowledge of anatomy, physiology, chemistry, bacteriology, pathology, medicine and surgery, and would be able to diagnose the various diseases. Then he would know, and would still be quite at liberty to use any means of treatment which his training, experience and judgment dictated.

The medical profession, or any member of it, is not bound by any pathy, creed or law of treatment. If it were so bound, it would be a cult instead of a liberal and enlightened profession. It only insists, for the protection of the people, that the practitioner be properly educated in the fundamentals of medicine.

In conclusion, the medical profession is not an association of men bonded together for the purpose of deluding the public. It is a scientific body of men. Medicine is a science as old as civilization itself, keeping abreast with the most advanced thought in the art of combating disease. It has made and is making more scientific discoveries for the welfare of the human race than any other profession in the world. In legislation it seeks only to protect the people by simple laws requiring a standard education in medicine.

Modern medical education presupposes the best the world can give. It is arranged to best prepare a physician to look after the physical welfare of man from the very hour of his conception until he has taken his last breath.

There is but one way for man to enter this world, but there are hundreds of exits from it. The physician is trained for, and it is his solemn duty to usher man into the world, to care for him thru all the vicissitudes of childhood, as well as illness and accidents during life, and to guard his exit from the world as long as possible.

Would you want to trust these delicate responsibilities to one less informed than a physician? What is your conclusion when a state legislature countenances a bill granting a state license intrusting these responsibilities to one with only a partial or no medical education? What is your conclusion concerning an individual who seeks such responsibilities by virtue of offering some superior knowledge or skill, without the regular and systematic training required of all physicians? There should be but one law which should apply to all individuals alike who treat in any manner the diseases and accidents of man, and such a law should license only those who have taken in a regular way the prescribed medical training that all physicians have taken.

MEDICAL PROBLEMS AND FOREIGN TRADE

R. E. Logsdon,
PORTLAND, ORE.
Managing Director, Oregon Health Exposition

Foreign trade experts tells us that the greatest difficulty American manufacturers have in obtaining and retaining foreign trade is that foreign business men demand certain things made according to certain specifications with which their people are familiar, while our manufacturers insist on selling them these certain things constructed according to American specifications. It's like making a six foot bed fit a six foot six inch man. The manufacturers of other nations, in seeking foreign trade, investigate what is wanted and manufacture according to those wants. After all it is the practical operation of some idea or principle which is desired and American articles are just as good or better than the foreign product. But the shape and the package are unfamiliar and so our foreign friends are prone to question the utility of the article when it arrives. So American manufacturers are changing their methods.

In this country the medical profession and its cooperating health agencies of all sorts are rapidly coming to a change in their methods to meet the public demand. The shape of the health product is being changed without altering its principle and the package is being made up to suit the popular fancy. Study of what the public wants leads to the belief that in idle hours they demand a small amount of instruction and a large amount of entertainment or distraction. Likewise, that they are prone to follow their usual roads and are hard to pry over into what they consider a bypath, even tho it may be a boulevard to health.

The National Health Exposition Association has been organized for the purpose of giving public health to the people in just the shape they want it and in just the sort of attractive package toward which they incline. People like expositions. They like to throng to some big public event, where light, life, color, motion and music combine in providing a big entertainment, where they can pick and choose their own pathways and are not bothered unless they want to be.

They look upon a health exposition as a place to have a good time, and they have it. Pageants, motion pictures, plays, playlets, masques, athletic exercises and all sorts of special features bearing indirectly upon the subject of health, provide plenty of entertainment for young and old. The blare of the band greets them when they enter and reechoes when they leave. But it is human to follow the crowd, and they do follow it into the great popular education displays provided by the sanitarians, the doctors, the dentists, the nurses, the social service workers, the pharmacists, the exponents of public safety and the merchants and manufacturers. They absorb soft drinks, candy and literature lavishly, but their greatest interest is in the educational displays. Mechanical contrivances, models, apparatus, posters and good demonstrators halt them of their own free will and in a flash they learn more about the human body and how to take care of it than ever previously in their lifetime

Finding a fine arrowhead in a ploughed field leads to a very definite search for other arrowheads, and observation of the several very successful recent health expositions leads to the conclusion that once interested the people follow thru the health exposition in search of other interesting things, becoming more and more absorbed as they go along. Many of them come every afternoon and evening.

All of this promotes discussion, questions and answers in factory, warehouse, store, office and home. In a word, the health exposition gives the people what they want as they want it, and when properly supervised by the ethical professions makes human health, comfort and happiness the community and individual life interest.

The Oregon Health Exposition will be held in Portland's Auditorium October 26 to November 4, including the period of the annual meeting of the State Medical Association. From interest already developed it should draw an attendance of 100.000 people.

Medical Schools in China. "While it has been necessary," the report of the Director of the Rockefeller Foundation states, "to provide one fully equipped and highly organized medical school to aid in setting standards for medical education in China, and to give opportunity for the training of teachers and investigators, it is realized that the general progress of medicine must depend largely on institutions under other auspices throughout the country; and that in all probability many of the future leaders of the Chinese medical profession will be men who have secured their undergraduate training entirely in such schools. The Board has therefore been greatly interested in the development of medical schools other than that for which it has assumed complete responsibility, and has given some financial aid to those which seemer to offer the most promise of sound growth." Aid was continued during 1921 toward the current expenses of three medical schools wholly or partly under mission control—Hunan-Yale College of Medicine, Shantung Christian University School of Medicine, and the Pennsylvania Medical School of St. John's University of Shanghai. Referring to the Hunan-Yale College of Medicine, Mr. Greene writes: "In the present period of transition from foreign to Chinese leadership, it is fortunate that there exists, in the Hunan-Yale College of Medicine at Changsha, an institution in which foreigners and Chinese are partners on equal terms. This school is controlled jointly by the Ruchun Educational Association, a society of Hunan gentlemen which receives a subsidy from the provincial government, and by the Yale Foreign Missionary Society. The dean is a Chinese graduate of Yale, who enjoys the full confidence of both foreigners and Chinese, and the staff is made up of Chinese and foreigners in practically equal numbers (six Chinese and seven foreigners). The greatest assets of this school are the interest of the Chinese community in which it is working, and the high educational ideals of its American supporters, resulting from close relations with a great American university."

The Sheppard-Towner Act in Relation to Public Health. On the basis of figures presented by Anna E. Rude, Washington, D.C. (Journal A. M. A., Sept. 16, 1922), it is estimated that approximately 13.6 per cent of the total births during the year 1920 occurred in hospitals. This percentage varied from 1.7 in Arkansas and Mississippi, to 40.1 in Illinois. Though these figures are only approximate, because of the admitted limitations of the questionnaire method, they at least point significantly to several phases of the hospital problem in relation to obstetrics. They show that there is hospital provision for approximately 40 per cent of the births in the United States, but that only 14 per cent of the births during 1920 occurred in hospitals. In this lack of untilization of available hospital facilities for confinement care are involved three important problems: (1) cost of hospital care; (2) inaccessibility of hospitals, and (3) lack of knowledge concerning the advisability of hospital care. Many other equally important problems await solution in connection with the hygiene of maternity and infancy. The Sheppard-Towner act is limited to a five-year period. Its fundamental purpose is to enable states to demonstrate for themselves the value of such work in terms of life saving and improved health and to stimulate them to develop more complete programs for making such work effective. The protection of maternity and infancy is not the function of one isolated group, but is dependent on the obstetrician, the pediatrician, and general practitioner, the public health nurse and the social worker in cooperation with the public health authorities.

NORTHWEST MEDICINE
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EDITORIAL

A SATISFACTORY MEDICAL MEETING

After the greatest medical meeting of the Northwest was held at Spokane in July, the question was raised as to its effect on the state association meetings to follow. Those pessimistically inclined predicted that the state meetings would be so dwarfed by this large meeting that they would prove to be failures and that this result might be expected to ensue during the coming years. The Washington Association meeting, held at Tacoma last month, demonstrated the fallacy of the argument thus presented. During recent years it has been thought necessary to have on the programs of our state meetings one or more men from leading medical centers as an attraction to assemble the members. This Tacoma meeting reverted to the custom of years ago and presented a program confined, with one exception, to papers by its own members. The pleasing result was a good attendance from all parts of the state who listened to able papers, well discussed. This experience demonstrated what has often been expressed, that our own state associations have an abundance of able, well qualified members who are capable of presenting papers equal to those offered by men from distant cities. The discussion of these papers was freely offered, perhaps more so than in the presence of the shining lights of the profession who may cause embarrassment in discussion on the part of timid members. While visitors were not as numerous as at some previous meetings, it was a pleasure to welcome old friends from Portland, such as Drs. Williamson, Andrew Smith, Coffey and Coe.

One outstanding feature of the meeting was the absence of the usual entertainment prepared by the profession of the city where the meeting has been held, which of late years has developed to elaborate proportions. It is proposed that this shall be omitted hereafter and the program confined strictly to medical and scientific work, as at this meeting. It is thought that this plan will enable the profession of smaller cities to entertain the state association. Another feature which presents unlimited possibilities for the future was the evening devoted to a public meeting, at which reports were made by the chairmen of various committees, couched in language which could be digested by laymen, the purpose being to instruct the public in questions of public health relating to medicine and the public welfare. This program had been well advertised to the public of Tacoma and the speakers were greeted by a packed house and the addresses were received with marked attention and apparent interest. From the experience of this meeting it would seem that there will be no future conflict between the new medical association, which comprises members of the profession from the states and provinces of the Northwest, and the individual state associations, whose meetings will be more in the nature of family gatherings for the consideration of matters of more personal interest to each association.

Following this meeting, the session of the Northwest section of the American College of Surgeons brought together representatives from a wide area to enjoy a two days profitable program of this organization. The banquet on the last evening of the state association was a joint affair for the members of the two associations and was highly enjoyed by a large attendance. During the following two days of the meeting special effort was directed toward enlightening the public as to hospital standardization and the purpose to produce surgeons of the highest character and qualifications. This demonstrates the tendency of the profession of today to take the public into its confidence which augurs well for future public health development.

PHYSICIANS ENTER POLITICS

For the first time in the state of Washington the medical profession, acting as an organization, has made its influence felt in a political campaign. In the primary election campaign, which closed September 12, that influence was the deciding factor in a dozen contests for seats in the legislature and not the least of the achievements was the nomination of three physicians as representatives. Since they were nominated by the dominant party in the several districts, their election is reasonably certain.

The medical profession, acting thru the Public Health League, did not concern itself with partisan successes or the division of spoils, but made the conservation of public health the only issue. Legislative records were scanned and candidates known to hold unsound views on health questions were vigorously opposed. The determination of the medical profession to have a voice in shaping and directing the public health policies of the state introduced a new element in Washington politics. The politicians are deeply impressed and are now courteously asking what the Public Health League wants in the way of legislative action.

At the last session of the legislature the medical profession had no representative in the lower house. This fact has been brought to the attention of the doctors upon many occasions since 1921 and a concerted effort was made to induce doctors to offer themselves as candidates. As a result of this agitation five physicians filed their declarations of candidacy: Drs. H. A. Mount and R. E. Butler, of Waitsburg; V. J. Capron, of Friday Harbor; C. E. Martin, of Carbonado and A. F. Brockman, of Bickleton. The winners are Drs. Brockman, Capron and Mount. In the senate Drs. W. M. Karshner, of Puyallup and J. C. McCauley, of Ellensburg, hold over from the last session.

In various districts laymen who declared their devotion to the cause of conserving the public health were elected, while others known to have unsatisfactory records or unsound views were defeated. In Tacoma one osteopathic practitioner, who had been identified with various antivaccination and antihealth campaigns and who announced that he was standing on a platform of "medical freedom," was beaten for reelection.

The selection of twenty-two senators and ninety-seven members of the lower house is incidental to a public health campaign being conducted by the League. The principal issue just now is the fight against Referendum Measure 13, an act passed by the last legislature thru christian science influence. The vote on that measure will be taken as a guide for future legislatures in handling similar laws, hence it is highly important to the health forces of the state that the public possesses full information. If it is decisively beaten, as the physicians confidently expect it to be, it is unlikely that another attempt will be made to handicap the work of the health authorities in the public schools. With this measure beaten and with a friendly legislatur, the way is opened to bring order out of the somewhat muddled laws governing the practice of the healing art in the state of Washington. Heartened by the success in the primary campaign, the Public Health League is going ahead with the preparation of a constructive and comprehensive legislative program.

.. OREGON ASSOCIATION MEETING ..

The annual meeting of Oregon State Medical Association will be held October 26-27 in Portland. The program of papers appears below. It will be noted that these will be presented on the second day, while the first day is devoted to clinics and consideration of matters affecting the general public.

Especial attention is called to the Health Exposition, whose opening at the City Auditorium will be a feature of this medical meeting. One purpose of this exposition is to bring the public into close contact with the work of the medical profession. It will demonstrate the value of ethical practice of medicine, illustrated by exhibits showing the progress in medicine, surgery, nursing, pharmacy, dentistry, sanitation, safety, care of the sick and social service. A large attendance of physicians is expected at the opening of the exposition, conducted by this association, and their continued interest and assistance are counted on to make it a success during the nine days of its continuance. A large attendance from the general public is assured from the interest displayed in similar expositions in other cities.

PROGRAM

THURSDAY, OCTOBER 26

8.30. Meeting of House of Delegates and Registration.

9 to 12. Diagnostic clinics in Medicine, Gynecology, Surgery, Neurology, Urology and Dermatology and Pediatrics at Portland Free Dispensary, Portland Sanitarium and County Hospital.

2 p.m. Opening of Oregon Health Exposition, City Auditorium.

4.30. Dedication exercises, New Building, University of Oregon Medical School.

6.30. League for Conservation of Public Health Dinner.

FRIDAY, OCTOBER 27

8.30. Meeting of House of Delegates.

PAPERS

10 a.m.

1. **Pulmonary Sequelae of Oral and Nasal Operations.** Chas. C. Browning, Los Angeles, Cal. Discussion—Ray C. Matson, Chas. E. Sears.

2. **Practical Aspects of Recent Nutritional Studies.** Albert Henry Byfield, Iowa City, Iowa. Discussion—C. U. Moore.

2 p.m.

1. **The Clinical Value of Cistern Puncture.** Lawrence Selling, Portland.

2. **Cardiac Irregularities, Their Significance and Treatment.** Wm. J. Kerr, San Francisco.

3. **The Etiology, Diagnosis and Treatment of Bronchial Asthma.** George Piness, Los Angeles. Discussion—Marr Bisaillon.

4. **The Value of Blood Chemistry in Pregnancy.** E. H. McLean, Oregon City. Discussion—H. D. Haskins, Robert Ellis.

5. **Public Health Problems.** George Parrish, Portland.

6. **Lowering the Mortality and Morbidity Rate in Toxic Goiters.** J. Earle Else, Portland. Discussion—W. B. Holden.

MEDICAL NOTES

OREGON

Dedication of Surgery. On Sept. 9 the J. K. Clark Memorial Surgery was dedicated at the Good Samaritan Hospital in Portland. This surgery occupies the top floor of the new east wing to the hospital, which is being constructed from funds donated by public spirited citizens. The surgery, which has been provided by Mrs. Clark as a memorial to her husband, has been equipped with every modern appliance which is provided for hospital use. At the dedication, addresses were made by leading surgeons and other citizens.

Hospital Opened. The Community Hospital, at Medford, was opened for use on Sept. 5. The building has been remodeled and equipped with modern hospital appliances. The superintendent is Miss Elsie Davidson, formerly of the Presbyterian Hospital of Chicago.

Hospital Soon to be Built. Work will soon be started on the Protestant Hospital which is to be constructed at Pendleton. The office building, surgery and one wing will be built this fall.

Publication of Book. Dr. B. A. Owens-Adair has published a book on the history of the movement for sterilization, eugenics and prevention of degeneration. She has been active for sometime promoting the movement for the sterilization of criminals and feebleminded in Oregon.

Dr. J. D. Gaston, of Portland, has left for an absence of six months to study in Paris, London and Berlin.

Medical Wedding. Dr. J. A. Saari, of Portland, was married Sept. 7, at Terre Haute, Ind., to Miss Frances Cook of that city.

WASHINGTON

Meeting of Public Health Officers. The Pacific Coast conference of health officers was held last month in Seattle, including health officers from Oregon, Washington, California and British Columbia. The program included papers from health officials from these states as well as the U. S. Public Health Service and sanitarians of the Pacific Coast. About fifty health officers were in attendance. A league of health officers was formed for the purpose of securing uniform state laws and health regulations.

Public Health League Officials. At a meeting of the Public Health League in Tacoma last month the following officers were elected for the ensuing year: Pres., H. J. Whiteacre, Tacoma; vice-pres., first district, Dr. George Dowling, Seattle; vice-pres., second district, Dr. J. R. Morrison, Bellingham; vice-pres., third district, Dr. H. M. Partlow, Olympia; vice-pres., fourth district, Dr. A. A. Mathews, Spokane; vice-pres, fifth district, Dr. C. J. Lynch, Yakima; secy-treas., Dr. P. V. von Phul, Seattle. Mr. J. W. Gilbert of Seattle continues as executive secretary.

New Hospital Proposed. It is proposed to build a $300,000 hospital in Walla Walla by a community stock sale. The movement is instigated by the lack of hospital facilities in that city and the surrounding country. A committee of prominent citizens has the matter in hand for action in the near future.

Hospital Soon to be Constructed. The work of constructing the hospital at New port will soon begin. It is estimated the building will cost $15,000, which amount has been subscribed. The site for the building and material for construction have been contributed by several lumber companies of that section.

Hospital Opened. La Valley hospital, at Sedro-Woolley, was opened last month after being closed for some time. Financial assistance was obtained from business men. It will be in charge of two nurses from Seattle.

Hospital Plans Completed. Ritzville is planing to build a $25,000 community hospital from funds obtained by private subscriptions with aid from the town and county. Plans have been made for the hospital which will be two stories, 86 by 40 feet, with all modern improvements.

Typhoid Epidemic. An epidemic of typhoid fever occurred last month at Camas. Patients were taken sick simultaneously with similar symptoms. Within two weeks more than twenty cases appeared. While the source of infection was not announced, circumstances pointed to its probable milk-bourne origin.

New Officers Elected. The following officers have recently been elected by the Snohomish County Medical Society: Pres., C. E. Leech, Arlington; first-vice-pres., A. C. Brown, Stanwood; second vice-presi., J. A. Durrant, Snohomish; third vice-pres., V. E. Washburn, Everett; sec'y., O. G. Kesting, Arlington; treas., E. P. Adams, Arlington.

Stevens County Medical Society at a recent meeting elected the following officers for the ensuing year: President, A. E. Baldwin, Kettle Falls; secretary, J. W. Henderson, Colville.

Dr. R. E. Smith, who has practiced for some time at Onalaska, has moved to Seattle where he will continue practice.

Dr. C. E. Kilham, who has been connected with the Port Blakeley Lumber Company for the past twenty-two years, has located for practice at Onalaska.

Medical Wedding. Dr. E. R. Edson, of Seattle, was married last month to Marie Frances Gashweiler.

IDAHO

Chinese Physicians Must Obey Law. The State Department of Public Welfare has commenced proceedings against Chinese physicians who fail to comply with the requirements of the state. It is found they have not reported births, deaths, contagious and infectious diseases. They are not registered as practicing physicians. It is proposed they be required to comply with the statutes.

Hospital Addition Completed. A portion of the new St. Joseph Hospital at Lewiston has been opened for patients. It provides for seventeen beds. It is expected soon to add a tuberculosis ward by enclosing with a glass roof a portion of the old hospital building.

Injured by Fall from Cliff. Dr. H. M. Leete, of Twin Falls, last month sustained severe injuries from falling over a cliff while on a fishing expedition. He drove home, a distance of fifty miles with no recollection of events following the injury.

Dr. E. E. Hinckley, who has practiced in Montpellier for a number of years, has gone to Phoenix, Ariz., where he will be established for practice.

Dr. F. B. Evans, recently of Spokane, has located for practice at Nez Perce.

Dr. J. B. Tyrrell, recently from North Dakota, has located for practice at Avery.

OBITUARIES

Dr. Elmer E. Heg died at Stanwood, Wash., Sept. 25, from disease of the heart, from which he had suffered for some time. He was 61 years of age, born in Waupin, Wis. His academic education was obtained at Detroit College, from which he graduated in 1882. He entered West Point where he remained for a time. In 1884 he entered Bellevue Hospital Medical College, from which he graduated in 1887. He located for practice in Yakima, where he remained till 1898, when he moved to Seattle. During the Spanish-American war he served with rank of major and brigade surgeon, being stationed in Cuba. He was also in army service during the World War. For a number of years he was secretary of the State Board of Health. When the pulmonary hospital was established, at Riverton, he became the first medical director and managed the institution for a number of years. He was much interested in dairy farming. At the time of his death he was living on his farm near Stanwood.

Dr. A. B. Oechsli, of Spokane, Wash., who has been connected with the U. S. Veterans' Bureau Hospital, died Sept. 11, following an automobile accident. He was on a fishing expedition when something went wrong with the car. It got out of control and backed off a high cliff. The doctor sustained a fracture at the base of the skull. He came to Spokane three weeks ago from Kansas City.

Dr. John C. Whiteaker, of Seattle, Wash., died Sept. 3, after an illness of three days. He was 37 years of age. He was a surgeon on the Blue Funnel Line of steamships. During the war he was surgeon in the British transport service and had lived in Seattle since the close of the war.

Dr. John Griswold, of Helix, Ore., died Aug. 29, after an illness of several months. He was 73 years of age and had practiced at Helix over forty years. He was one of the pioneer physicians of Umatilla County and was held in high respect by the residents of a large area.

REPORTS OF SOCIETY MEETINGS

WASHINGTON STATE MEDICAL ASSOCIATION

MINUTES OF THE THIRTY-THIRD ANNUAL SESSION OF WASHINGTON STATE MEDICAL ASSOCIATION, TACOMA, WASH., SEPT. 6, 1922.

The thirty-third annual session of Washington State Medical Association was convened at the Scottish Rite Cathedral, Tacoma, Wash., September 6, 1922.

House of Delegates

FIRSE SESSION

The first meeting of the House of Delegates was called to order by the president at 9 a. m. On calling the roll a quorum was found present, the following delegates answering to their names:

W. D. Read, Tacoma
H. D. Dudley, Seattle
R. T. Congdon, Wenatchee
C. H. Thomson, Seattle
J. H. O'Shea, Spokane
R. J. O'Shea, Seattle
D. A. Nicholson, Seattle
A. P. Loe, Seattle
H. P. Marshall, Spokane
S. S. Oppenheimer, Spokane
J. B. Munly, Spokane
Elmer Hill, Walla Walla
L. S. Roach, Kalama
D. E. McGillivray, Pt. Angeles
A. J. McIntyre, Hoquiam
D. H. Palmer, Seattle
G. W. Swift, Seattle
P. V. Von Phul, Seattle
C. W. Sharples, Seattle
E. W. Young, Seattle
J. H. Hunt, Seattle
G. A. Tripp, South Bend
C. R. McCreery, Tacoma
H. G. Willard, Tacoma
H. J. Whitacre, Tacoma

D. W. Jackson, Burlington
W. F. West, Everett
C. H. Weisman, Spokane
J. T. Bird, Spokane
F. Epplen, Spokane
H. W. Partlow, Olympia
W. C. Keys, Bellingham
J. R. Morrison, Bellingham
F. H. Brush, Yakima

It was moved that the minutes of the last annual session be adopted as published in Northwest Medicine. Seconded and carried.

Annual address of the president, Dr. W. D. Read.

Dr. W. D. Read recommended the following amendments to the by-laws for adoption:

Article XI. Section 3, line 4, following "tuberculosis," should read "Child welfare, conservation of vision, health problems, public education, cancer, social hygiene, public health, hospital standardization and survey, Public Health League contact committee."

Article XI. Section 3, paragraph B, line 5, pige 16, after "Assistance" add, "The executive committee shall supervise and direct the work of the contact committee."

Article XI. Section 3, page 16, after paragraph B add B'. "The executive committee with the chairman of all standing committees, except those on arrangement, program and publication, shall constitute the contact committee. They shall meet quarterly, the first meeting to be held one month after the annual state meeting. The contact committee shall lay out a broad program of action working through the chairman of each section, arrange corresponding committees in each county medical society, list speakers, make surveys and use every effort to enlighten and direct public opinion in regard to the broad problems of hygiene and the practical accomplishments and progress in scientific medicine."

Article XI. Section 3, page 16, paragraph D. Strike all of paragraph D following the words "in its official organ," line 7.

Article XI. Section 3, page 16, strike paragraph E and F.

It was moved that a committee be appointed to reveiew the president's recommendations and amendments, this committee to meet with a committee from the Public Health League and to report back to the House of Delegates the following day. Seconded and carried.

The president then appointed the following as the committee: Dr. G. W. Swift, chairman, Dr. C. R. McCreery, Dr. J. H. O'Shea.

Dr. C. S. Pascoe presented his report as chairman of the committee on Venereal Prophylaxis.

Dr. G. W. Swift presented his report as chairman of the committee on Hospital Standardization and Survey.

The committee reports were accepted and ordered printed in Northwest Medicine.

It was moved to reconsider the adoption of the committee reports and publication of same in the Journal and to appoint a committee to consider and report upon the reports of these committees. Seconded. Ruled out of order.

It was moved that the recommendations contained in the committee reports be laid on the table for one day. Seconded and carried.

The secretary-treasurer stated that it was customary to have the books examined by a certified public accountant on January 1 and July 1 of each year and that there were two audits in the past year as follows:

FINANCIAL REPORT FOR YEAR 1921

EXHIBIT "A," ASSOCIATION FUND

Balance January 1, 1922		$2,624.70
RECEIPTS		
From membership dues for year ending January 31, 1921:		
Chelan County Society, 16 members	$64.00	
Clallam County Society, 5 members	20.00	
Clarke County Society, 16 members	64.00	
Cowlitz County Society, 4 members	16.00	
Grays Harbor County Society, 28 members	111.00	
King County Society, 400 members	1,600.00	
Lewis County Society, 20 members	80.00	
Lincoln County Society, 9 members	40.00	
Pacific County Society, 11 members	43.00	
Pierce County Society, 94 members	376.00	
Skagit County Society, 19 members	76.00	
Snohomish County Society, 51 members	203.00	
Spokane County Society, 152 members	610.00	
Stevens County Society, 11 members	48.00	
Thurston-Mason County Society, 1 member	4.00	
Walla Walla County Society, 26 members	104.00	
Whatcom County Society, 32 members	128.00	
Whitman County Society, 24 members	96.00	
Yakima County Society, 49 members	196.00	
Total number members 968		$3,879.00
Half of interest received Schedule I		237.92
Total carried forward		$6,741.62
DISBURSEMENTS		
Refund Dr. W. B. Penny, over payment of dues	$ 3.00	
Metropolitan Press, journals	40.00	
Secretary-Treasurer, postage	30.00	
Northwest Medicine, journal sub.	962.50	
Dr. Marshall, traveling expenses	30.00	
A. M. A. Directory	12.00	
Barney-Truckey, lettering office door	5.53	
Mary Cutter, multigraphing	6.00	
Dr. Oppenheimer, expenses, Spokane	60.00	
Dr. Munly, expenses, Spokane	60.00	
Dr. Elmer Hill, expenses Walla Walla	110.00	
Dr. W. D. Read, expenses, Spokane	34.32	
Cerny Sign Co.	1.50	
Pioneer Printing Co., programs	51.30	
Mrs. H. Nichols, clerical	10.00	

City Messenger, cartage	2.00	
Robt. Brott, reporting	76.00	
Half of general expenses, Schedule II	1,215.96	
		$2,710.11
Balance to credit this fund		$4,031.51

EXHIBIT "B", LEGAL DEFENSE FUND

Balance January 1, 1921	$6,912.18

RECEIPTS

Subscriptions from the following counties for year ending Dec. 31, 1921:

Asotin	1 subscribers	$ 10.00	
Benton	1	10.00	
Chelan	3	30.00	
Clarke	5	50.00	
Clallam	3	30.00	
Cowlitz	1	10.00	
Grant	1	10.00	
King	173	1,730.00	
Kittitas	3	30.00	
Kitsap	5	50.00	
Klickitat	1	10.00	
Lewis	8	80.00	
Lincoln	4	40.00	
Pierce	49	490.00	
Pacific	7	70.00	
Skagit	4	40.00	
Snohomish	14	140.00	
Spokane	52	520.00	
Stevens	5	50.00	
Thurston-Mason	2	20.00	
Walla Walla	17	170.00	
Wahkiakum	1	10.00	
Whatcom	20	200.00	
Whitman	1	10.00	
Yakima	21	210.00	
Okanogan	1	10.00	
			$4,140.00
Half of interest received, Schedule I			237.91
Total brought forward			$11,290.09

DISBURSEMENTS

Walter S. Fulton, legal services	$ 550.00	
Walter S. Fulton, expenses	30.00	
Chas. O. Bates, legal expenses	772.25	
Chas. O. Bates, expenses	272.37	
Edward J. Cannon, legal services	1,350.00	
Edward J. Cannon, expenses	376.62	
Hal C. Cole, legal services	50.00	
Hal C. Cole, expenses	6.00	
J. Speed Smith, legal services	7.50	
Dr. H. T. Buckner, expert witness	33.00	
Dr. H. E. Allen, expert witness	25.00	
Dr. H. D. Dudley, expert witness	25.00	
Drs. Bourns and Mowers, expert witness	25.00	
Dr. C. H. Thomson, expert witness	25.00	
Dr. G. W. Beeler, expert witness	25.00	
Dr. Frank Carroll, expert witness	25.00	
Dr. D. H. Palmer, expert witness	50.00	
Dr. R. D. Forbes, expert witness	25.00	
Dr. D. M. Stone, expert witness	25.00	
Aetna Ins. Co., Clevenger vs. Reimcke	13.01	
Aetna Ins. Co., Humes vs. Taylor	42.44	
Half of general expenses, schedule II	1,215.96	$9,969.15
Balance to credit this fund		$6,320.94

EXHIBIT "C," RECAPITULATION

Walter S. Fulton, legal services		$ 550.00	
Cash and securties on hand January -, 1921			$9,536.88
Gross receipts for the year 1921:			
Membership dues	$3,879.00		
Legal defense subscriptions	4,140.00		
Interest	475.83		
	$8,494.83		
Disbursements:			
Association expenses	$2,710.00		
Legal defense expenses	4,969.15	$7,679.26	$815.57
Balance on hand			$10,352.45
Balance on hand made up as follows:			
Cash			$ 30.00
Seattle National Bank, open account			2,452.85
Liberty Bonds (par $8,000.00) cost			7,869.60
			$10,352.45

SCHEDULE "I"

General receipts:	
Interest on certificates of deposits	$ 158.02
Interest on Liberty Bonds	317.81
	$ 475.83

SCHEDULE "II"

General disbursements:	
Lowman and Hanford, office supplies	$ 6.55
Gillam-Bird Co., office supplies	3.52
Metropolitan Bldg. Co., rent	200.00
Metropolitan Bldg. Co., remodeling office	98.00
Louis E. Smith, audit	300.00
Miss Evelyn F. Cooper, salary	1,500.00
Miss Evelyn F. Cooper, miscelleanous expense	6.85
Frederick & Nelson, rug for office	16.50
Lumbermen's Printing Co., printing	235.00
Secretary-Treasurer, postage	65.00
	$2,431.92

Financial Report for January to July, 1922

EXHIBIT "A," ASSOCIATION FUND

Balance January 1, 1922		$4,031.51

RECEIPTS

From membership dues, six months, ending June 30, 1922:

Chelan County Society, 13 members	$ 52.00
Cowlitz County Society, 5 members	20.00
Grays Harbor County Society, 20 members	80.00
King County Society, 385 members	1,540.00
Lewis County Society, 14 members	56.00
Pierce County Society, 88 members	352.00
Skagit County Society, 14 members	56.00
Snohomish County Society, 27 members	108.00
Spokane County Society, 133 members	532.00
Stevens County Society, 7 members	28.00
Thurston-Mason County Society,	

13 members	52.00	
Walla Walla County Society, 25 members	100.00	
Whatcom County Society, 32 members	128.00	
Total members 776		$3,104.00
Half of interest received, Schedule I		$ 171.74
		$7,307.25

DISBURSEMENTS

Northwest Medicine, subscriptions	$ 760.00	
E. J. Cannon, attorney, expenses	175.00	
Half of general expenses, Schedule II	559.57	
		$1,494.57
Balance to credit this fund		$5,812.68

EXHIBIT "B," LEGAL DEFENSE FUND

Balance January 1, 1922	$6,320.94

RECEIPTS

Subscriptions from the following counties for the six months ending June 30, 1922:

Benton	1 subscribers	$ 10.00	
Chelan	1	10.00	
Clarke	2	20.00	
Cowlitz	1	10.00	
Grays Harbor	5	50.00	
King	75	750.00	
Kittitas	2	20.00	
Kitsap	3	30.00	
Klickitat	1	10.00	
Lewis	4	40.00	
Lincoln	4	40.00	
Pierce	12	120.00	
Skagit	2	20.00	
Snohomish	5	50.00	
Spokane	32	320.00	
Stevens	7	70.00	
Walla Walla	6	60.00	
Wahiakum	1	10.00	
Whatcom	5	50.00	
Whitman	3	20.00	
Yakima	6	60.00	
	175		$1,750.00
Half of interest received, Schedule II			171.74
			$8,242.68

DISBURSEMENTS

Lumbermen's Printing Co., subscription blanks		$ 12.00	
Chas. O. Bates, legal services		425.72	
Clevenger vs. Reimcke	$106.47		
Edwards vs. MacLafferty	68.55		
Jerisich vs. Steagall	107.00		
Ponder & Forney			
Cornwall vs. Sleischer	143.75		
E J. Cannon, legal services		520.60	
Say vs. Northrup			
Half of general expenses, Schedule II		559.58	
			$1,517.90
Balance to credit this fund			$6,724.78

EXHIBIT "C," RECAPITULATION

Cash and securities on hand January 1, 1922		$10,352.45
Gross receipts January 1 to June 30, 1922:		
Membership dues	$3,104.00	
Legal defense subscriptions	1,750.00	
Interest	168.04	
Profit on sale of Victory Bonds	175.40	
		$ 5,197.48
		$15,549.93

DISBURSEMENTS

Association expenses	$1,494.57	
Legal defense expenses	1,517.90	
		$ 3,012.47
		$12,537.46

Balance on hand made up as follows:		
Balance Seattle National Bank		$ 2,241.66
Liberty Bonds, 3rd issue, par $500.00, cost	$ 500.00	
Liberty Bonds, 1st issue, par $2,000.00, cost	1,954.00	
Liberty Bonds, 2nd issue, par $700.00, cost	6,841.80	
Liberty Bonds, 4th issue, par $1,000.00, cost	1,000.00	
		$10,295.80
		$12,537.46

SCHEDULE "I"

General receipts:	
Interest on Liberty Bonds	$ 168.88
Profit on sale of Victory bonds	17$.40
	$ 343.48

SCHEDULE "II"

General disbursements:	
Miss Evelyn F. Cooper (Lay-secy.) salary	$ 750.00
Louis E. Smith, C. P. A. semi-annual audit	150.00
Metropolitan Bldg. Co., January rent	20.00
Dr. Thomson, February to June rent	100.00
Lydia Anderson, map	10.00
Gillam-Bird Co., files	2.65
Renfro-Wadenstein Desk Co., letter files	44.00
Remington Typewriter Co., repairs	22.50
Miss Evelyn Cooper	20.00
	$1,119.15

It was moved that the auditing committee of three members be appointed to review the Secretary-Treasurer's report. Seconded and carried.

Committee appointed: Dr. J. H. O'Shea, chairman, Dr. D. A. Nicholson, Dr. H. W. Partlow.

Moved that a rising vote of thanks be given the Secretary-Treasurer, Dr. C. H. Thomson, for his wonderful handling of the finances of the Association. Seconded and carried.

The House of Delegates adjourned until the following day.

SECOND SESSION

The House of Delegates was called to order by the president, September 7, at 9 a. m.

On calling the roll a quoroum was found present:

DECEASED MEMBERS

I regret to report the decease of the following members and suggest that suitable action be taken:

Dr. Marietta Marsh Armstrong of Seattle, a graduate of Oregon, 1897. Deceased, September 24, 1921.

Dr. Edgar Mason Cook of Everett, a graduate of Trinity, 1883. Deceased, July 29, 1922.

Dr. Walter Vose Gulick of Seattle, a graduate of Rush, 1901. Deceased, February 10, 1922.

Dr. John Franklin Harris of La Crosse, a gradate of American Medical College, 1882. Deceased, October 7, 1921.

Dr. John Hiett of Ione, a graduate of Marion-Sims, 1892. Deceaced, October 11, 1921.

Dr. Harry S. Martin of Spokane, a graduate of Victoria, 1884. Deceased December 11, 1921.

Dr. Walter Dwight Merritt of Enumclaw, a graduate of Rush, 1902. Deceased, 1922.

Dr. Rufus P. Moore of Northport, a graduate of Vanderbilt, 1893. Deceased, 1922.

Dr. Geo. Newlands of Seattle, a graduate of Illinois, 1879. Deceased, May 1, 1922.

Dr. David Lawrence Smith of Spokane, a graduate of Marion-Sims, 1892. Deceased, December 20, 1921.

Dr. James Raymond of Yakima, a graduate of Illinois, 1900. December November 12, 1921.

Respectfully submitted,
(Signed) Dr. C. H. Thomson,
Secretary-Treasurer.

Dr. G. W. Swift presented the following report of the findings of the special committee appointed to review the recommendations and amendments offered by the president:

To the House of Delegates:

The special committee appointed to confer with a committee from the Public Health League, to consider the report of the president, Dr. W. D. Read, beg leave to report as follows:

It is recommended that the by-laws be not changed at this time and that the following resolution, empowering the president to appoint such committees as may be necessary to carry out the proposed plan, be adopted:

Be it resolved, That the president appoint the following named committees in addition to the committees already provided for in the by-laws:

(a) Child Welfare, (b) Conservation of Vision, (c) Public School Education, (d) Cancer, (e) Social Hygiene, (f) Mental Hygiene, (g) Industrial Health Problems, (h) Hospital Standardization.

Be it further resolved, that the chairmen of these committees constitute the contact committee:

That the executive committee of this Association shall direct the activities of the contact committee and be authorized to expend funds necessary to defray expenses at meetings other than the annual meeting:

That a field secretary may be employed from time to time to assist in this work who may be paid an adequate compensation for his services:

That this resolution shall be in force and effect until the next annual meeting of this Association.

(Signed) G. W. Swift, chairman,
Charles McCreery,
John H. O'Shea.

For the League—
E. Weldon Young,
A. O. Loe,
D. A. Nicholson.

It was moved that the report of the special committee be accepted and the plan be adopted. Seconded and carried.

It was moved that the reports of committees be referred to the contact committee. Seconded and carried.

Dr. John H. O'Shea, chairman of the auditing committee reported that the secretary-treasurer's books had been examined and found to be correct and in good condition.

It was moved that the report of the auditing committee be accepted and the committee discharged. Seconded and carried.

The secretary-treasurer read the following letter from the Hartford Accident and Indemnity Company:

August 8, 1922.

Dr. C. H. Thomson,
Secy. Wash. State Medical Assn.,
Cobb Bldg.,
Seattle, Washington.

Dear Doctor:—

In spite of the fact that many companies are anticipating an increase in premium charge on physicians and surgeons liability insurance, the Hartford Accident and Indemnity Company believe that, acting with the Washington State Medical Association, because of the volume of the business and the high character of this risk by reason of the restrictions of the Association, they are justified in issuing standard coverage and will issue this coverage on the basis of $15.00 per member.

They propose to write a blanket policy to the Association issuing certificates to each physician as his premium is received by you and remitted to us as their agent.

The policy which they will issue will be the standard physicians and surgeons liability policy with standard limits of $5,000 and $15,000. The company will pay all expenses of investigation and defense in addition to the payment of any judgment rendered but it will be agreed between the Association and the company that medical testimony given by a member of the Association will be given without cost to the company. Should this proposition appeal to the Association, the company will cooperate with the Association thruout, reserving the right, after consulatation with the board of trustees of the Medical Association, to reject any applicant for insurance or for renewal thereof. It will be further understood that in no case is this coverage to be extended to hospitals, or to any claim arising against a hospital, or the owner of a hospital whether or not the owner is a member of the Association.

We are enclosing herewith statement of the Hartford Accident and Indemnity Company, which is a subsidiary company to the Hartford Fire Insurance Company, one of the oldest and largest American companies. A service office is operated in Seattle with a competent corp of attorneys.

The writer will look forward to an opportunity of going into the matter with you at greater length and giving you any details that might be necessary for your intelligent consideration of this proposition.

Very truly yours,
Stuart Thompson Company,
(Signed) S. G. THOMSON.

The secretary stated that our defense has been uniformly successful since our organization, but that some of our members apparently desired some form of indemnity insurance. At the present time the defense fund has 414 members. During the past year eleven cases were satisfactorily settled. At the present time there are thirteen cases pending, with twelve threatened cases, in which as yet there has been no legal action taken.

Dr. E. Weldon Young moved that this matter of indemnity be referred to the executive committee, to be reported to the board of trustees, with power to act, but that the present defense should not be dropped.

Dr. John H. O'Shea moved that:

1. The communication from the Hartford Company be laid on the table.

2. That the matter of indemnity be referred to the executive committee to be reported to the board of trustees with power to act.

No. 1. Withdrawn by Dr. O'Shea.

No. 2. Seconded. Lost. (Rising vote, yes, 13; no, 17.)

Dr. D. A. Nicholson, chairman of the committee on revision of by-laws, gave the following report:

The committee reappointed to continue revision the by-laws and constitution of the Washington State Medical Association and also of the county societies of the State of Washington, desires to report that the following counties have not completed revision of their constitution and by-laws or if they have, they have not forwarded to us a copy of the same: Cowlitz, Lewis, Lincoln, Whitman, Grays Harbor and Stevens.

Respectully yours,
(Signed) D. A. NICHOLSON.

It was moved that the report of the committee be accepted and the committee be commended for the work already done. Seconded and carried.

Dr. H. P. Marshall moved that the board of trustees of this Association be empowered to defray the expenses of the delegates to any meeting. Discussed. Withdrawn by Dr. Marshall.

The House of Delegates then proceeded to elect the officers for the ensuing year.

Dr. John H. O'Shea was duly nominated and elected as president.

Dr. Frederick Epplen of Spokane was nominated for 1st Vice-President. Dr. John H. O'Shea requested that the nomination be withdrawn as he wished later to nominate Dr. Epplen as delegate to the American Medical Association. The nomination was withdrawn, and Dr. C. B. Ward of Spokane was duly nominated and elected as 1st Vice-President.

Dr. F. H. Brush of Yakima was duly nominated and elected as 2nd Vice-President.

Dr. C. H. Thomson of Seattle was duly nominated and elected as Secretary-Treasurer.

Note: (The assistant Secretary-Treasurer is appointed by the Executive Committee.)

There being two vacanacies on the Board of Trustees from the Western District, Dr. R. J. O'Shea of Seattle and Dr. C. R. McCreery of Tacoma were duly nominated and elected.

There being likewise two vacancies on the Board of Trustees from the Eastern District, Dr. S. S. Oppenheimer of Spokane and Dr. C. H. Weisman of Spokane were duly nominated and elected.

The following were then duly nominated and elected for Journal Trustees for the following year: Dr. H. P. Marshall of Spokane, Dr. V. P. VonPhul of Seattle and Dr. H. D. Dudley of Seattle.

Dr. D. E. McGillivray of Port Angeles was duly nominated and elected delegate to the American Medical Association for the term 1923-1924. Dr. D. H. Palmer was then duly nominated and elected as alternate for the same term.

Dr. J. D. Windell of Spokane, the other delegate to the A.M.A., being declared ineligible by the A.M.A. on account of not being a Fellow of the A.M.A. during the past two years, Dr. Frederick Epplen of Spokane was duly nominated and elected to fill out his unexpired term. Dr. P. D. McCornack of Spokane was elected alternate for the same term.

Dr. H. H. Palmer now objected to the foregoing election, saying, that he had been elected alternate to Dr. J. D. Windell the preceding year and was, therefore, entitled to serve in Dr. Windell's place. During the ensuing discussion, the President called upon Dr. W. T. Williamson of Portland, who is a Trustees of the A.M.A., for an opinion. Dr. Williamson was of the opinion that Dr. Palmer was entitled to serve as delegate on account of the ineligibility of Dr. Windell.

The President thereupon declared the preceding election for Delegate void.

Dr. C. H. Thomson appealed from the decision of the President, on the grounds that an alternate could only represent his association until the next House of Delegates had opportunity to regularly elect a delegate.

Vote being taken, the Chair was sustained by a vote of 15 to 5.

Dr. D. E. McGillivray's election as delegate to the A.M.A. was thereupon confirmed and Dr. Frederick Epplen was duly nominated and elected as his alternate.

The President then declared that Dr. D. H. Palmer was entitled to serve as the other delegate to the A.M.A. for the ensuing year. (By reason of his previous election as alternate.) Dr. P. D. McCornack of Spokane was duly nominated and elected alternate.

It was moved that the next meeting of the Washington State Medical Association be held in Spokane in 1923.

Seconded and carried.

It was moved that this body approve the plan of entertainment now adopted by the Pierce County Medical Society of having each member pay his own way and that this plan be continued.

Seconded and carried.

Dr. D. H. Palmer moved that the amendment to the By-Laws replacing the office of President-elect as presented to the last Session of the House of Delegates, be adopted.

It was moved that the amendment be laid on the table.

Seconded and carried.

The Sixteenth House of Delegates adjourned sine die.

BOOK REVIEWS

Edited by Kenelm Winslow, M.D.

Disease of the Thyroid Gland. By Arthur E. Hertzler, M.D., F.A.C.S., Professor of Surgery in the University of Kansas School of Medicine, etc. With a Chapter on Hospital Management of cGiter Patients. By Victor E. Chesky, A.B., M.D., Associate Surgeon to Halstead Hospital, Halstead, Kansas. 106 Illustrations. Cloth, 245 pp. $5.00. C. V. Mosby Co., St. Louis. 1922.

This is by far the most satisfactory of any of the recent treatises on goiter. The writer covers the whole subject in a masterly manner and the work is as valuable for the internist as for the surgeon. The classification is most simple and the illustrations of microscopic pathology of the different types of goiter are most illuminating. The author shows that neither the Goetz nor metabolic tests are conclusive. Great conservatism is shown thruout the book and the observations on symptomatology, treatment and prognosis reveal wide experience and wisdom. The main classifications are into simple colloid goiter and colloid with secondary toxicity, toxic goiter, including primary, with and without exophthalmos, a typical forms, ayperacute forms, malignancy and interstitial type (forme frust).

The chapter on prognosis is most noteworthy. The writer describes the various results of colloid goiter in the adult and affirms that there is little tendency to disappearance but considerable danger from toxicity, with likelihood of cyst, hemorrhage or pressure symptoms. The life history of primary toxic goiters, without operation, detailed over a period of twenty-five years is most instructive. Operation accomplishes in a month what nature requires years to attain, even under most favorable circumstances. Failure in operative results is due commonly to insufficient removal of the thyroid but the author deems this preferable to radical bilateral lobe removal. Mortality should not occur in goiter operations and its occurrence reflects on the skill and wisdom of the surgeon.

The chapter on substernal and intrathoracic goiters is admirable and of great worth to the diagnostician. The chapter on treatment of each type of goiter will also be found valuable and conservative, with well considered medical therapeutics in selected cases, or until such time as surgery is indicated. The fact that so commonly the thyroid gland is the seat of a variety of pathologic changes is emphasized and, as one becomes more experienced in handling goiter, one appreciates the great frequency of these mixed types and the difficulty or impossibility of making absolute pathologic diagnoses. The clinical types described by the author are much the most satisfactory for practical purposes. There is probably no disease in which the combined and coordinated knowledge of the experienced surgeon and internist is more essential for the best results. The last fifty pages are devoted to the operative treatment of goiter. Hertzler operates wholly under local anesthesia. He says, if one is an adept in the art of deception, it may be an advantage to "stel" the gland. But he is opposed to this because patients may have heard of the trick and be always anticipating that every move of the surgeon means operation. "The man who believes he is staling anything from a woman is only foolinfi himself," as the author sagely remarks. As a whole this book appears to be the most admirable presentationof goiter from a practical, conservative and clinical standpoint that has come to our notice.

WINSLOW.

The International Medical Annual. Fortieth year. A Year Book of Treatment and Practitioner's Index. Cloth, 534 pp. $5.00. William Wood and Co., New York, 1922.

Our readers are all familiar with the admirable, concise English summary of progress in medicine and surgery, all compressed into one volume with comments on the same by eminent medical men. Under encephalitis there is a review on eye ground findings in this disease. Able clinicians, who have had quite a wide experience in this infection, deny that papilledema ever occurs. Yet there are others who have reported choked disc.

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Not long since, in commenting upon the work devoted to encephalitis lethargica, the reviewer critized the writer for making the absence of choked disc in encephalitis a criterion for distinguishing it from brain tumor. The reviewer has seen marked optic neuritis in several cases and in one, in which choked disc was found by competena opththalmologists, the autopsy showed unmistakable encephalitis. There is no disease with more variable symptoms and pathology and the last word has by no means been spoken about it. At present there is no absolute certainty of discriminating it from brain tumor except at autopsy. There is an extraordinary broad summary of the endocrine system with regard to its functions in evolutionary life, and its interrelationships with the sympathetic system, together with newer clinical knowledge of endocrine disturbances. The work is the most valuable single volume on yearly medical progress. WINSLOW.

Nutrition and Clinical Dietetics. By Herbert S. Carter, M.A., M.D., Assistant Professor of Medicine, Columbia University. Paul E. Howe M.A., Ph.D., Associate in Animal Pathology, Rockefeller Institute for Medical Research. Howard H. Mason, A.B., M.D., Instructor in Diseases of Children, Columbia University. Second edition, thoroughly revised. Cloth, 703 pp. 17.50. Lea and Febriger, Philadelphia and New York, 1921.

In this volume there is a revision, especially in the chapters on energy, metabolism and physiology of digestion, a complete revision of the chapter of vitamines, and a new chaper on metabolism in pregnancy and lactation, together with feeding of children over two years old. The work is a conservative, a progressive and authoritative textbook on the physiology of foods, food requirements, on the chemistry of foods, and on feeding in infancy and in special diseases. It is rather surprising that the recent work of the use of cod liver oil by Hess, and the effects of light on rickets, are not mentioned in the chapter on that disease. Cod liver oil appears to be a specific in rickets. The work as a whole is clear and well written summary of this important subject.

Applied Chemistry. An Illustrated Textbook for Secondary Schools. By Fredus N. Peters, Ph.D., Instructor in Chemistry in Central High School, Kansas City, Mo. 461 pp. Illustrated. $3.50. C. V. Mosby Co., St. Louis. 1922.

The author states that a textbook on chemistry for secondary schools ought to be a readable book, just as well as one merely surfeited with facts. In this book he attempts to present the chemical facts of everyday life in such a form as to make them interesting. He has accomplished his purpose in making the book attravtie and profitable for any one who is seeking information on the subject of chemistry.

Food, Health and Growth. A Discussion of the Nutrition of Children. By L. Emmet Holt, M.D., L.L.D. Formerly Professor Diseases of Children in the College of Physicians of Columbia University, etc. 273 pp. $1.50. The Macmillan Co., New York. 1922.

The author states that the subject of food and nutrition of children has acquired a new interest and much new knowledge has been added. Retarded growth, mental and physical, is usually associated with errors in diet. During adolesence the average boy or gil eats more than the average adult man or woman. All phases of food and nutrition are discussed. Milk is the one indispenable food for children. After discussing vitamines the author states that cabbage is such a rich source of all vitamines that it should form a larger part of the diet than is usually the case.

Physical and Mental Hygiene. By Mary B. Eyre. R. N., President Colorado Board of Nurse Examiners. 208 pp. The Macmillan Co., New York. 1922.

The purpose of this book is to show the place of mental psychology in the work of the nurse. The author deals first with the fuondation upon which physiology rests in the science of anatomy, physiologically and biologically. The place of the mind is discussed in its relations to our physical bodies and the law underlying all biological development. It is an instructive presentation of various phases of the development and working of the human mind.

Obstetrics for Nurses. By Joseph B. DeLee, M.D., Professor of Obstetrics in the Northwestern University Medical School, Chicago. New (6th) Edition, entirely reset. 12mo of 525 pages, with 245 illustrations. Philadelphia and London: W. B. Saunders Company, 1922. Cloth. $3.00 net.

Altho this book is intended for the use of nurses, it would answer very well as a working handbook for the obstetrician. It presents a great deal of useful information. As the author states, the vast majority of births still occur in the home and the nurse is often on her on resources. If she will digest and absorb the material contained in this volume she will be in a position to meet any emergency. The illustrations are numerous and appropriate. It is a book to be commended.

A Text-Book of Gynecology. By James Young, D.S.O., M.D., F.R.S.C. (Edin.), Assistant Physician Royal Maternity Hospital. 334 pp. 183 illustrations. v2.75. The Macmillan Company, New York, 1921.

This work presents in condensed form the essential facts dealing with gynecology. It discusses displacements of the uterus, infections of the genital canal, extrauterine pregnancy, new growths, and operative gynecology. It contains a wealth of illustrations, of which the insertions of microscopic sections are the most striking. This is a handy book of reference which will be found useful for the gynecologist.

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ORIGINAL CONTRIBUTIONS

ORTHOSTATIC OR INTERMITTENT ALBUMINURIA AND THE INCIDENT OF SAGGING KIDNEYS IN YOUNG ADULTS*

Alexander Hamilton Peacock, F.A.C.S.
SEATTLE, WASH.

Definition. By this condition is meant the albuminuria which appears after standing erect or exercising in this position and the disappearance of this same, when the patient is put to bed. In the past there has been a tendency to group all albuminurias under one of the various forms of nephritis. This is still done by the standard insurance companies and such an insurance applicant would have little chance to obtain a policy. These individuals are not suffering with nephritis and have no symptoms of renal disease excepting the albuminuria. Their blood pressure is normal and also the urea index shows no change. Many of our former soldiers who have applied to the compensation department of the United States Veteran's Bureau show this type of albuminuria and it is largely thru a comprehensive study of these cases, a couple hundred in fact, that the deductions at the end of this article were made.

Etiology. In taking the history of these patients we often encounter facts relative to body blows, kicks by animals, falls from horses or on board ship, cases where the applicant was violently thrown to the ground by an explosion or thrown across the deck of a ship against a stanchion, lifting weights too great for the individual, as a fire-hose or a piece of timber. The previous medical history of the majority of persons examined showed the mild eruptive fevers of childhood. All of the cases of true nephritis of an earlier period, such as following scarlet fever, were ruled out.

These persons were young adults ranging in ages from twenty to thirty years and had ordinarily good health. Such constitutional diseases as tuberculosis and syphilis were excluded. In other words, the sole complaint is this very mild transient albuminuria which appears and disappears at intervals and the patient would be unaware of his condition unless this reaction had been discovered accidentally.

Anticipating our findings and going over the etiology a little deeper, we suggest the theory that a floating or sagging kidney produces stress or strain upon the renal vessels, which in turn causes a congestion of the kidney with the result of appearance of albumin in the urine. Whether this is the exact process which takes place we are not certain, but we have proved that a number of albuminurias have been unilateral, that there has been a definite nephroptosis due to injury and the albumin has always come from the sagging kidney. This will explain the disappearance of this albuminuria after the patient has been lying down for a couple of hours and the kidney is then at rest and lying normally in the renal notch.

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* Read before the Thirtieth Annual Meeting of Idaho State Medical Association, Wallace, Idaho, July 10-11, 1922.

There have been several cases with striking results, where the sagging was bilateral and nephropexy was contraindicated and in which abdominal binders with kidney pads were worn by the patient and the albuminuria disappeared. Certain it is that these sagging kidneys produce circulatory changes in kidneys which in turn play some factor in producing albuminuria which is not nephritis.

Symptoms. In reviewing these case histories and delving into the subjective symptoms, we find the following: There is at times loss in weight, varying from 10 to 15 pounds, the patient is at times easier fatigued than usual, he is somewhat nervous and has no ambition. Backache occurred in 75 per cent of them. One-half of these were bilateral and the other half unilateral. Twenty-five per cent of them gave definite colic, simulating stone in the ureter. There was rarely any hematuria. Urine was usually clear and vesical irritability not encountered. In a number of them there were no subjective symptoms of any kind.

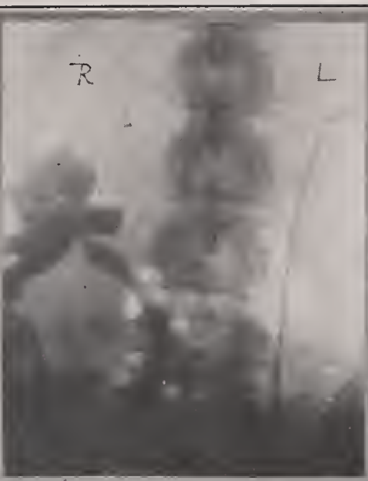
The objective symptoms: Only in the very slender type of individual could the kidney be palpated. These would not run over five per cent. The objective symptoms were largely negative, such as a negative blood Wassermann, blood pressure, blood urea and no edemas. The urinalysis as a rule showed a clear urine of normal specific gravity from 1015 to 1020, a mild trace of albumin present in some specimens and absent in others. Only at rare intervals were casts found and then only a few, no bacteria and no pus cells. This albumin was usually present in the afternoon and evening specimens and absent in the morning specimen. Also, when these patients were put to bed for observation and study, the albumin often disappeared. The diet seemed to make no change in this albuminuria and large quantities of food were taken without influencing it at all. We have instances where patients were kept on a milk and meat-free diet for months without any change in the albuminuria.

The chief characteristics of this albuminuria are its disappearance and reappearance at intervals, that it is very mild in character, that it is only detected by close observation, that there is the absence of casts and epitheliat cells. This type of albuminuria has been observed for a long while, has been named by various writers as orthostatic albuminuria, come and go albuminuria, intermittent albuminuria and transitory albuminuria. All of the renal functional tests employing the various dyes, as phenosulphonephthalein and indigo-carmin, show no impairment in this dye output.

Pathology. The gross appearance of the sagging kidney varies a lot. Some are small and others are large. The amount of perirenal fat is a negative factor. Some of these kidneys have a very thin coat of fat around them, others have a great deal. It was noticed that the fat sagged with the kidney and is not a true support to it, if it is once loosened up or detached from the renal fossa. All of these kidneys showed an excessive mobility, many with a rotation laterally. There were also kinks in the ureter. As a rule the pelvis was not enlarged, tho in the later stages the pelvis becomes distended and pyelitis develops. This is just a step towards a later hydronephrosis and atrophy or destruction of the renal parenchyma.

There have been no histologic studies made of these kidneys after nephropexy, there being no opportunity. The kidney seems quite normal on palpation, it is firm and solid, the capsule is not under tension but the color is a purplish red. The pathology of the urine we have already given.

Diagnosis. Urinalysis. This is the first step of the examination. A catheterized specimen is preferred and not one but a dozen specimens should be taken at different intervals so as to get a composite picture of the urine. The specific gravity is around 1015, rarely higher or lower. The urinary output is normal; the albumin shows a mild ring at the point of contact with nitric acid. Esbach usually gives a slight haziness but hardly enough is precipitated for measure. Casts are very infrequent and when found are usually hyaline. Later on the urine will show other changes with the development of pyelitis which is indicated by pus cells and



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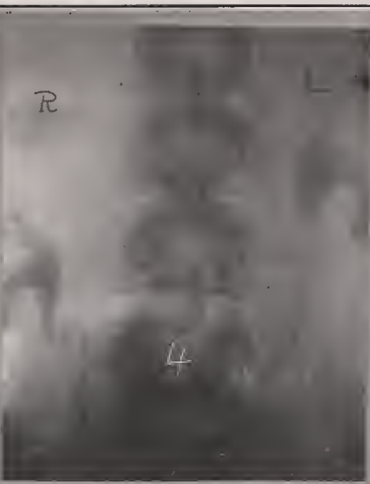

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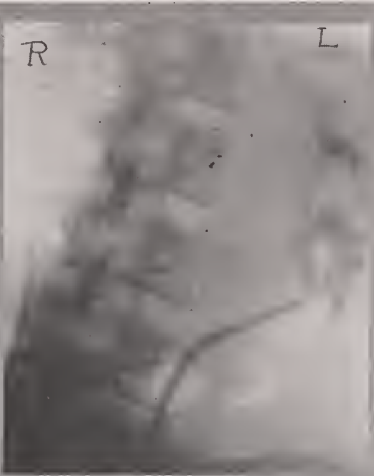

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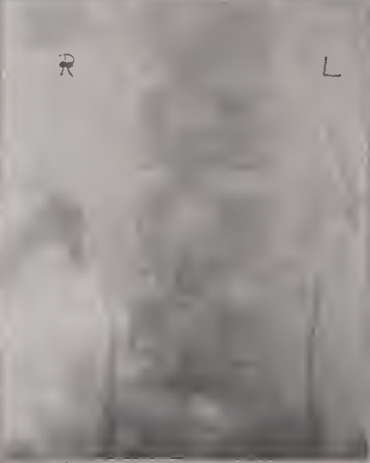

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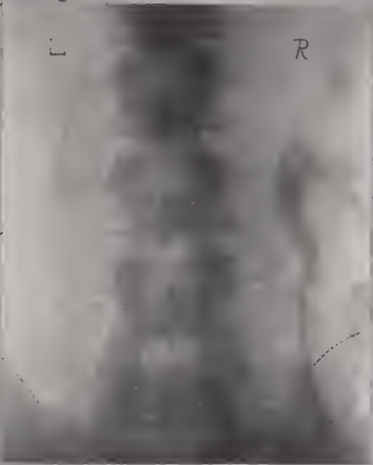

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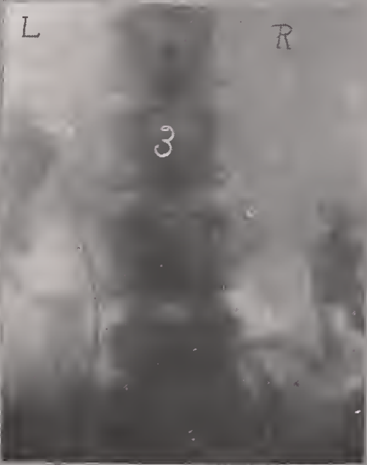

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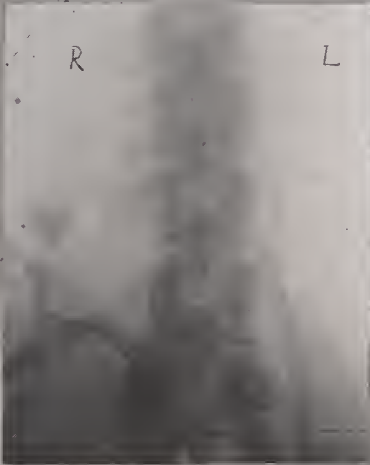

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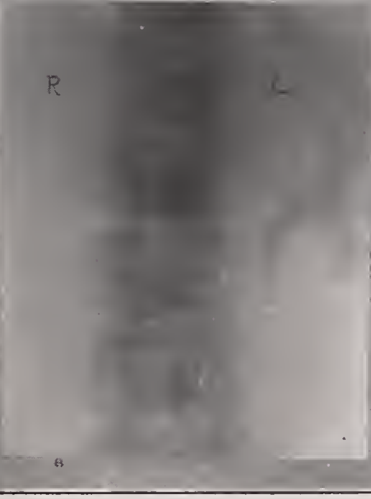

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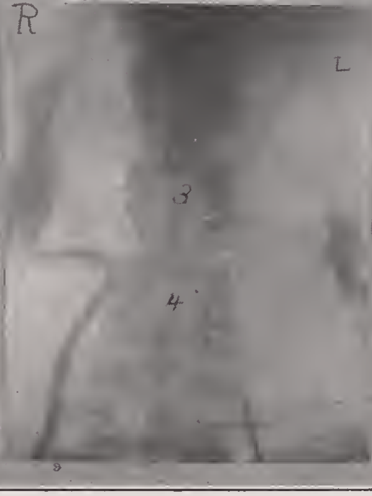

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Fig. 1. Right nephrotosis with kinking of right ureter. Right ureter is dilated. Renal pelvis large, with minor calices obliterated. Left pelvis small, incompletely filled but apparently normal. Fig. 2. Right nephrotosis and kink of ureter Right renal pelvis and calices normal, ureter lumen normal. Left kidney normal in all respects. Fig. 3. Left nephrotosis and kinking of ureter. Rother queer shaped renal pelvis but normal. Ureter is not enlarged. Angulation is not exceedingly acute and probably does not cause any increased pressure in renal pelvis and no discomfort to patient. Fig. 4. Right nephrotosis with ureteral kink. Renal pelvis and ureteral lumen appear normal. Ureteral kink is very acute and is a type causing pain. This is an early stage which cause hydronephrosis. Fig. 5. Right nephrotosis and several kinks in ureter. Multiple kinks probably due to catheter being inserted nearly into pelvis of kidney. If catheter had been withdrawn four to six inches, probably only one kink would be present. Fig. 6. Right nephrotosis with ureteral kink. The ureter is dilated. renal pelvis not large but calices are incomplete. This represents the transitional period between hydronephrosis and nephrotosis, with the latter the etiologic factor of the former. Left kidney is ptosed. The ureter is not filled, altho ureteral catheter is at renal pelvis. Probably there is a definite kink at end of catheter in the ureter, this kink allowing the contrast solution below to get into the bladder, but not allowing emptying of pelvis, despite the fact that peristalsis begins in pelvis of kidney. Fig. 7. Right nephrotosis and ureteral kink. Renal pelvis is large, minor calices obliterated and ureter very large. Later stage would be hydronephrosis. Left same as right but not so severe. Fig. 8. Left nephrotosis and ureteral kink, early stage. Fig. 9. Kink in ureter, bilateral. Nephrotosis, bilateral. Pelvis of kidney and urethral lumen normal.

bacteria, usually one of the colon group. In the two kidney urines there is practically no difference in the urea excretion or in the appearance of the phenosulphonephthalein. Divided functional tests also show up equally well.

Blood analysis. The Wassermanns were invariably negative. Only here and there was a positive one found. There were no secondary anemias, unless the patient was found late in the process and a well developed pyelitis or hydronephrosis had developed. The blood urea ranged from 15 to 20 milligram per 100 c.c. In other words, there was no urea retention.

Blood pressure. In contrast to hypertension the blood pressure was often low, ranging from 110 over 60 to 120 over 80. This might have been due to the patient's inactivity and small ingestion of food.

Palpation. Rarely was it possible to palpate the kidneys for very obvious reasons, due to the kidney lying in such a deep notch and so far in the back, with the palpating hand held away from the kidney by partly filled intestines and stomach and the rigid costal border. Only in those cases where the kidney was loose enough to reach the rim of the pelvis could it be palpated. In men the abdominal walls are well developed as a rule and do not lend themselves readily to relaxation.

Ureterograms and pyelograms. It is the x-ray which makes the final diagnosis and gives us a photographic record of these conditions. The ureters are catheterized with x-ray catheters, using preferably number six size. Three plates are taken. (1) The first is called the "control," of just the x-ray catheter in the ureter and the patient in the decubitus position. (2) The ureter and the pelvis are then filled with a contrast solution, namely 20 per cent sodium iodide, by means of a graduated syringe. This is injected until pain is noted. The picture is then taken. (3) The last picture is taken with the patient sitting upright. This gives us an idea of the position of the kidneys and the character of the ureters, when the patient is standing or walking around as in normal novements.

It is surprising to see the various positions the kidneys take. Often there is decided rotation in one or two directions or there is a marked sagging. Instead of the kidney shadow under the twelfth rib, it will be found some distance below. A number of very low kidneys have been discovered in which the pain was slight. This was due to a large ureter and the easy escape of the urine into the bladder. A number of patients show a decided hydronephrosis, due to a chronic blocking off of the ureter from malposition. These pyelograms are shown so that a visual idea of this condition may be obtained. In no other way can an accurate diagnosis be made and, had it not been for the fact that all of these cases of albuminuria and of unilateral backache had been studied in such a manner, they would have been entirely overlooked. While we are still on the subject of diagnosis I will recite a few typical cases.

Case 1. Mrs. H. C., female, age 29, ex-army nurse, overseas. Family history entirely negative.

Past history. Influenza at Brest, France. Ill three weeks, followed by bronchitis and asthma. Has pain in her back, especially on bending over to lift patients. Very nervous, otherwise good health.

Findings. Chest negative. Nutrition good. Blood pressure; systolic 138 mm., diastolic 98 mm. Albumin trace, no casts.

Renal study. Function normal. Pyelograms show sagging of right kidney.

Case 2. W. K. Sept. 1921, ex-soldier, cowboy, age 25.

Family history. Father 70, living and well; mother 60, living and well; no nephritis, cancer or other hereditary disease.

Past history. Measles only. Good health until five years ago. Has had many falls from horses. First noticed a pain in right side while at Honolulu. It has increased since then. Rode in horse race at Camp Lewis, when he had a severe attack of colic and was taken to the Base Hospital unconscious. Ill for two weeks. All x-rays were negative. No renal study. After a fast race he suffered another attack of colic and was in bed for three weeks. Can only work a few days at a time driving a motorcar. Tires out easily. No urinary symptoms.

Findings. Blood Wassermann negative. Blood pressure, systolic 100 mm., diastolic 70 mm. Nutrition good. Muscles developed. Abdomen shows a mass in the region of the right kidney. Urine shows a trace of albumin, no casts.

Urologic study. Phthalein 65 per cent in two hours; appearance 4 min. Pyelograms showed right nephroptosis on sitting up and kink of ureter. Morning urine was albumin-free.

Case 3. H. E. W. June 20, 1921. Male, age 23, fireman. Has always done heavy work.

Family history. Negative for hereditary disease.

Past history. Smallpox in childhood. Tumbled out of a wagon many times. Hurt himself lifting heavy objects. Two months ago was refused life insurance on account of albuminuria. Has been on a non-meat diet for fifteen months. No change in albuminuria. Two days ago hurt his back while stevedoring.

Findings. Large, muscular man. Blood Wassermann negative. Blood pressure, systolic 115 mm., diastolic 65 mm. Reflexes normal. Palpation of abdomen negative. Urine shows albumin, no casts. Function normal.

Urologic study. Right kidney urine shows albumin, left one none. Pyeglograms show a right nephroptosis with kinking of the ureter.

June 29, 1921. Right nephropexy. Several urinalyses since then show no albumin.

Case 4. F. T. H. March 15, 1921. Male, age 49, surgeon, ex-army officer.

Family history. Father d. cerebral hemorrhage at 80 yrs., one brother has tabes; one sister has cholelithiasis. No tuberculosis or cancer.

Past history. In 1912 fell into the Elwha river while fishing. Had suppression of urine. Shell shock in 1918. First discovered albumin in July 1920. It has appeared very irregularly since. General health fair. Nervous and tires out easily. Weight normal.

Findings. Undernourished. Blood pressure, systolic 130 mm., diastolic 85 mm. Phthalein 70 per cent in two hours. Albumin absent, no casts. March 16, albumin postive trace. Oct. 3, albumin trace. Oct. 5, albumin trace. Urologic study. No calculus. Pyelograms showed a decided right nephroptosis.

Case 5. E. I. Jan. 16, 1922. Female, age 23, housewife and ex-navy clerk, always athletic.

Family history. One aunt died of consumption.

Past history. Feb. 1919, influenza, arthritis and pleurisy. Six years ago had painful urination and pain in left side. Passed blood in the urine. Tires out easily. No backache. General health fair. No edemas.

Findings. A small slim young woman. Blood pressure, systolic 110 mm., diastolic 40 mm. Temperature 98.6. Pulse 104. Urologic study. Decided nephroptosis, bilateral, with kinks of the ureter. Right side worse. Albumin a trace.

Feb. 3. Right nephropexy performed. Kidney found freely movable. Wound healed, primary union.

March 6. Pain in the back entirely gone. Urine showed no albumin.

Case 6. J. A. July 22, 1921. Male, age 29, printer, ex-soldier, infantry.

Family history. Parents and four brothers and sisters living and well. No hereditary disease.

Past history. Fracture of fourth and fith lumbar vertebras May, 1918, at Cantigny, France; also inhaled poison gas. Three months in the hospital. Pains in small of back ever since. Pain is fixed. General health fair. Unable to lift as his back plays out.

Findings. Blood pressure, systolic 110 mm., diastolic 80 mm. Reflexes normal. Albumin one-fourth of one per cent. Pyelograms showed right nephroptosis.

Aug. 10, right nephropexy performed. Right kidney was long, narrow and very freely movable. It shows some scars. Primary union.

Results. Entire relief of pain and disappearance of albumin.

Case 7. H. L. J. Sept. 23, 1921. Male, age 22, radio operator. Twenty-six months in U. S. Navy and fourteen months in Merchant Marine.

Family history. Mother invalid past twenty years. Nervous.

Past history. In 1918 sent to hospital in Manila for a right sided colic. Diagnosed first appendicitis, then right renal calculi. Struck across back on left side against stanchion; ship caught in typhoon. Patient very nervous.

Findings. A nervous, excitable young man. Wassermann negative.

Blood pressure, systolic 160 mm., diastolic 90 mm. Urine clear, trace or albumin, no casts.

Urologic examination. Right nephroptosis with sharp kinking of ureter below pelvis.

Dec. 1. Right nephropexy performed. Kidney very mobile, plenty of perirenal fat which moves like a ball with the kidney. Kidney normal size. Primary union.

Dec. 6. Developed right parotitis.

April 8, 1922. Blood pressure, systolic 140 mm., diastolic 80 mm. Albumin absent. No pain in back.

Case 8. J. W. D . Sept. 15, 1921. Male, age 24, laborer, ex-soldier.

Family history. Father 55, crippled with arthritis. No hereditary disease.

Past history. Measles and pneumonia as a child. Influenza in 1919. Fracture of ribs in 1919. Adenoidectomy in 1910. In Jan. 1919, while on guard duty at Labourne, France, fell off a train while alighting. Fell twenty feet down a bank, wrenching his back. Next day had back strapped. Since then has strained his back on several occasions. Worse after lifting. Most marked on right side.

Findings. Nutrition poor. Height 6 feet. Weight 139 lbs. Blood pressure, systolic 120 mm., diastolic 90 mm. Urine shows a trace of albumin in the afternoon.

Urologic study. Right kidney very low, with multiple kinks of ureter.

Sept. 29. Right nephropexy performed. Kidney rather small and mobile, little fat. No other pathology. Primary union. After this a slight trace of albumin.

March 3, 1922, six months later, urinalysis, sp. gr. 1020, clear, acid, albumin and sugar absent, Phthalein first hour 70 per cent, second hour 10 per cent, total 80 per cent. Patient entirely relieved of his backache. Feels exceptionally well.

Treatment. (a) It is vitally necessary that these patients be forbidden to lift or run up and down stairs, perform heavy manual labor or enter into any violent athletic exercises. Any physical exercise which would have a tendency to displace the kidney must be forbidden.

(b) Belts. It has been found that a well-fitting abdominal binder which increases intra-abdominal pressure and tension will hold a great many of these kidneys up in position. They are, however, very uncomfortable, especially in warm weather and on stout patients. In some they are not practical and will not keep the kidney in place. They should be put on with the patient lying flat.

(c) Operation. Nephropexy well performed is a very efficient remedy or cure. Only those patients should be operated on who have good healthy muscle tissue and good abdominal walls. Those with relaxed fascias and a general ptosis are very poor subjects for operation and should never be operated on. Therefore, the case for operation must be selected with great care.

The type of operation most successful is the one in which a triangular suture is taken in the substance of the kidney on its posterior surface.

The ends of this suture are rethreaded and suture A is brought out in the last intercostal space posteriorly. Sutures B and C are brought out into the deep erector muscles of the spine. This pulls the kidney up into a normal position and holds it firmly. Those operations which employ the renal capsule are invariably a failure, as the capsule is extremely thin and delicate. It readily tears, so that the first cough or vomiting reflex the patient has will tear out the sutures and the kidney will be as free as ever. A suture, however, that penetrates the substance of the kidney will hold firmly as we have had opportunities to check up some of these nephropexies at other operations.

CONCLUSIONS

1. Many cases of orthostatic albuminuria are due to sagging kidneys which is not the albuminuria of nephritis.

2. Many of these cases of orthostatic albuminuria ooccur in athletes, those who are subjected to physical strain as in lifting, or those giving a very clear history of injury.

3. A single urinalysis is never sufficient, as many patients will not show albumin in the morning specimen but it will appear after being up and around all day.

4. Pyelograms should be taken in the decubitus and sitting positions, as the ptosis will often be otherwise missed.

5. Those patients submitted to nephropexy showed a marked general improvement and in many there was a disappearance of the albuminuria. This change has been noted also after wearing a binder.

6. A definite chain of lesions can be traced from sagging kidneys, namely: kinks of the ureter, dilation of the renal pelvis, hydronephrosis, then pyelitis, stone, obstruction of the ureter and pyonephrosis. Pyelitis and sagging kidneys go hand in hand.

Note on the Use of Epinephrin in Heart Block. The report of a case by H. M. Korns and C. D. Christie, Cleveland (Journal A.M.A., Nov. 4, 1922), illustrates the fact that epinephrin may increase a preexisting partial auriculoventricular block. The increase is probably a central vagus effect. Increase in auricular and ventricular rates, excitation of premature ventricular beats and production of extreme auricular arrhythmia may be brought about by the action of epinephrin on a heart which is the seat of auriculoventricular block.

ALKAPTONURIA*

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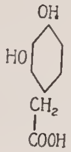
We were prompted to make this study by the finding of alkapton in the urine of a young woman suffering from a gastrointestinal upset, from the fact revealed by an examination of the literature that very few cases of alkaptonuria had been reported and the conclusion, therefore, that the condition is not widely known.

Altho alkaptonuria is of rare occurrence and not destructive of health, its recognition is of great importance, since a great many alkaptonurics at some time in their lives are inconvenienced and injured by being treated as diabetics. One of Osler's four cases was treated for diabetes by several prominent physicians before the reducing substance was recognized.

Boedeker[1], in 1861, was the first to detect this reducing substance in the urine. To it he gave the name alkapton, because of its "greed" for alkalies, the word being derived from the two words "alkali" and "katein," to absorb greedily. In 1891 Bauman and Walkow[2] identified alkapton as homogentisic acid. In the same year Bauman, Fraenkel[3], Osborne[4], and Neubauer and Flatow[5] were able to synthesize it, and found its structural formula to be that of hydroquinonacetic acid.



Incidence. It is a rare condition. Up to the present time seventy-two cases have been reported and only thirteen of these have been reported in this country. The thirteenth case was reported by Bilderback[6], occurring in an infant. The cases herein reported are the fourteenth, fifteenth and sixteenth. It shows a familial, altho noncongenital tendency. This is especially true of consanguineous marriages. The eleven cases which Garrod reported occurred in four families. In all these the parents were first cousins.

This condition is a freak of metabolism, in which the amino acids, tyrosin and phenylalinin are not carried to their catabolic end products. This metabolic insufficiency makes the destruction of the benzene ring impossible and is manifest by the appearance of homogentisic acid in the urine. Homogentisic acid is the normal intermediary product that just precedes the breaking up of the benzene ring; it is at this point that the catabolism stops in this condition. Increase in tyrosin and phenylalinin, whether they are supplied by feeding a diet rich in protein or by the ingestion of the amino acids themselves, causes a corresponding increase in the amount of homogentisic acid in the urine.

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Garrod believes that the error in metabolism is maximal, that is to say, all tyrosin and phenyllalinin are converted into homogentisic acid. This is borne out by the fact that the ratio of the homogentisic acid to the total N. in the urine is constant for all cases.

Symptoms. As a rule no symptoms exist. The chief complaint as far as the urine is concerned is that there is a staining of the underclothing. Ochronosis or blackening of the cartilages or fibrous tissues with pigmentation of the skin accompanies alkaptonuria in a small proportion of cases. Albrecht believed that homogentisic acid combined with the chondromucoid to form a substance producing this discoloration.

Qualitative Tests. Homogentisic acid is recognized by the following tests:

1. Upon exposure to the air or the addition of alkali the urine turns brown and gradually black.
2. It reduces copper solutions.
3. Does not reduce alkaline bismuth solutions (Nylander's reagent).
4. Does not react to the fermentation test.
5. Does not rotate polarized light.
6. Reduces silver lactate, the reagent of Folin and Wu, in the cold, which no other reducing substance in the urine will do.
7. Upon the addition of a dilute ferric chloride solution a deep blue color appears for a moment until oxidation is complete.

While there are three cases in this family, it has only been possible to make a complete study of the one case, the original patient. The other two reported were discovered as the result of urinalyses made on members of the family, because of the familial tendency of this disorder.

Of the family in question, the father died of typhoid fever, and the mother of pernicious anemia. No reducing substance was known to have existed in the urine of either. There were nine children in the family, six girls and three boys. One girl died in infancy. Up to the present time it has only been possible to examine the urine of six of the members, three of which contained alkapton.

Case 1. (the original case). Miss B. B., age 18, stenographer.

She was first seen by us in 1920 with influenza during the second epidemic. Urine was not examined at that time.

In September, 1921, she had an acute gastroenteritis. It was at this time that a reducing substance was found in the urine and identified by us as alkapton. No symptoms had occurred at any time that could be attributed to the presence of alkapton.

Past Illnesses. Were of no importance excepting an acute illness in 1915, diagnosed as acute Bright's disease. Symptoms of this illness were acute onset, vomiting, edema of the face and scanty urine. Urine was reported to have contained albumin, red blood cells, hyaline and granular casts and a reducing substance, which was not identified at that time by the physician in charge, altho he did find that it did not react to the fermentation test. Albumin and a few casts were reported to be present in March and February, 1916.

Laboratory Findings. Alkapton has been present upon every examination, a total of fifteen different specimens. It was identified by the usual reactions.

Quantitative estimates of homogentisic were made April 30, 1922, for a twenty-four hour period. Diet on that day consisted of protein 70 grams, fat 79 grams, carbohydrates 258 grams. The total amount of urine was 875 cc. Total homogentisic acid 4.18 grams. Total nitrogen of urine 7.8 grams.

The presence of albumin upon one occasion led to the investigation of this feature of the case. It was possible upon four occasions to produce albumin in the urine by having the patient assume an etxreme lordotic position for a period of ten minutes, when albumin had been absent at preliminary examination. Microscopic examination of urine at the tme of albuminuria showed an occasional hyaline cast.

Blood analysis for nonprotein nitrogen bodies was made and showed:

	Feb. 17, 1922 mg per 100 cc.	May 28, 1922 mg per 100 cc
Non. Pro. Nit.	30	33.3
Urea nitrogen	16	16.6
Uric acid	2	2.5
Creatinine	1.2	1.2

Phenolsulphonphthalein kidney functional test could not be completed because homogentisic acid interfered with the color reaction upon the addition of alkali. Basal metabolism (Feb. 17, 1922)—1.5 per cent. Wassermann negative.

Case 2. Jack B., age 16 years.

Has had measles, numerous attacks of tonsillitis and rheumatic fever with a resulting mitral insufficiency.

Case 3. Mrs. H., age 37 years.

She has two healthy children. Has had no illness of any consequence. The urine of her children was negative for alkapton.

(The above cases are reported from the service of Drs. Epplen and Anderson.)

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EXTRARENAL AND URETERAL PATHOLOGY CAUSING RENAL SYMPTOMS IN THE PRESENCE OF A NEGATIVE URINE*

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The examination of the urinary tract in obscure, and sometimes clearly defined cases, is too often dismissed and never again suspected after a routine examination of a single specimen of urine, the routine examination being made by a lay technician. In a certain group of cases, to which the speaker wishes to call your attention today, the urinary findings are negative, but the pathology is just as definite as a large calculus or a pyonephrosis, altho the urinary findings do not indicate it. Many of these cases are operated upon for some abdominal condition, and the symptoms are just as severe after the operation as before. Our literature is replete with reports of single cases or groups of cases of this nature, and we cannot be too mindful of the fact that a negative urine does not eliminate the urinary tract as the part of the anatomy responsible for the symptoms.

Of all the abdominal organs, the appendix has undoubtedly been the innocent victim most frequently, with the female pelvic organs and the gallbladder a close second and third. The speaker appreciates the fact that there are many cases with obscure symptoms, where a complete renal study is not indicated or practical, but there is another group where a complete renal study would reveal the true diagnosis, avoid many operations and save the physician much unpleasantness.

It is a part of this multioperated group of cases that prompted the speaker to present this subject to you today. In a small group of cases, where the symptoms have been present from six months to six years, a number of unnecessary operations have been performed without relief and the correct diagnosis was not made until the renal studies were completed. Too often patients are subjected to an operative procedure without careful analysis of the symptoms, and as a result frequently do not get the relief that was promised. During the past few years, with the aid of many new instruments of precision, medicine has changed considerably, and today the operation is merely a mechanical part of the cure of the patient and not so much a diagnostic procedure.

The pathology responsible for the cases under discussion can be divided into three groups, namely, (1) inflammatory, acute, chronic, (2) new growths, (3) anatomic deformities, congenital, acquired.

Under the acute inflammatory cases come those with abscess formation. Not infrequently abscesses located in the lumbar region are diagnosed perinephritic, yet on careful study the perinephritic tissues are only a secondary consideration, because many of these abscesses originate at some other point, and involve the perinephritic tissues by extension. Subdiaphragmatic and retroperitoneal abscesses are often confounded with true perinephritic abscesses.

Barnard[1] has reported seventy-six cases of subdiaphragmatic abscesses, of which one case only originated from the kidney, twenty-three cases being extraperitoneal and fifty-three intraperitoneal subdiaphragmatic abscesses. Richardson[2], of Boston, has reported fifty-nine cases of perinephritic abscesses, thirty-four of which were apparently primary, twenty were secondary to other renal involvement, and five were due to extension from neighboring organs. Of the thirty-four primary perinephritic abscesses, twelve, or 35 per cent, showed an entirely negative urine. Braasch[3], of Rochester, Minn., reports one-hundred and one cases operated on for abscesses involving the perinephritic tissues, of which thirty-four were subdiaphragmatic or retroperitoneal and sixty-seven were true perinephritic abscesses. Eighteen of the sixty-seven true perinephritic abscess cases showed no other clinical evidence of renal involvement, ten of which had a negative urine, while three of the subdiaphragmatic or retroperitoneal abscess cases showed red blood cells or pus cells in the urine.

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* Read before the Thirty-third Annual Meeting of Washington State Medical Association, Tacoma, Wash., Sept. 6-7, 1922.

Thus any case with a questionable lesion in the upper right or upper left abdomen should have a complete renal study, because, knowing the absolute and relative function of each kidney, the operator can deal with these problems without hesitation, while otherwise his activities are hampered for fear of a postoperative anuria.

In considering the chronic inflammatory process we find the problems are far more numerous, more complex, and of longer duration than the acute processes. All structures coming in contact with the periureteral tissues from the ureteropelvic to the ureterovesicle junction may cause symptoms, if diseased.

While the number of cases with extra uretheral pathology, causing renal symptoms, is probably greater in the pelvic than the abdominal portion of the ureter, there is a greater variety of lesion involving the abdominal than the pelvic portion of the ureter. Owing to the frequency of infections in the generative organs in both male and female, and the close proximity of the ureters to these organs, a ureter can easily become involved and give rise to very definite symptoms, which may be difficult to differentiate from ureteritis, renal colic, appendicitis or vasitis.

Young[4] reported the first case of ureteral obstruction, caused by chronic seminal vesiculitis in 1904. Since then a number of cases have been reported, the most recent being those of Mark and Hoffman[5]. Tuberculosis of the mesenteric lymph glands is not an infrequent entity, and sometimes it gives rise to renal symptoms. Hepburn[6] reported three cases in 1918, all of which had previously been operated on for appendicitis and all had a positive roentgenogram.

New growths of any variety, from any organ or tissue, causing pressure upon the ureter at any point thruout its entire course, are apt to cause renal symptoms. At first these symptoms may be very mild and confusing and frequently are not detected until the tumor has reached such an enormous size that it can easily be palpated. This is particularly true of retroperitoneal tumors. The female pelvic organs are the host of large tumors that cause pressure upon the ureter and in turn give rise to renal symptoms, which may be the only symptoms complained of to the clinician.

Anatomic deformities are divided for convenience into congenital and acquired. The congenital deformities include all types of renal and ureteral anomalies that may give rise to urinary symptoms in the presence of a negative urine. Under this group come the ectopic kidneys, malformed kidneys, multiple ureters, anomalous blood vessels, etc. One can never be too careful in studying these cases because the absence or duplication of structures make the problems under consideration more complex.

The acquired deformities are different and of these there are none so numerous or troublesome as the movable kidney. Here the symptoms again may be very confusing, and the pathology may appear to be very definite. By studying them it can often be found to be secondary to some other lesion.

In looking over the literature and studying the etiology of nephroptosis, the crux of the situation seems to be a lowered intraabdominal pressure, which may be due to many causes. By studying the results of other workers, one constantly questions the wisdom of doing a nephropexy because of a simple floating kidney. Fowler is perhaps the most enthusiastic advocate of this operation, and for a time nephropexy was a very popular procedure universally. Then it gradually fell into disrepute, and now is done only in selected cases.

There are cases, however, where there is a definite increase in the mobility of the kidney. The ureter is caught in adhesions which limit its motion, and cause acute angulation of the ureter. In these cases the pathology is different from the former group or else a second pathologic entity is superimposed upon the first. Here the proper procedure is evident.

CONCLUSIONS

1. A negative urine does not exclude renal or ureteral pathology.
2. All questionable right or left abdominal conditions should have a complete renal study.
3. Differential diagnosis is more important before than after operative procedures.

(Paper illustrated with lantern slides).

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THE DIAGNOSIS OF SURGICAL KIDNEY*

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I shall confine this paper to the diagnosis of surgical kidney, especially those conditions in which enlargement of the kidney is found. A renal swelling may be so slight that it is only found upon clinical examination, or it may be large enough to attract the patient's attention to it. A number of pathologic changes in the kidney may give rise to a tumor of that organ, such as hydronephrosis, pyonephrosis, renal tuberculosis or abscess, new growths and various forms of cysts. It is necessary to be able to diagnose any one, not only from any other, but also from other tumors simulating a renal swelling.

The chief characteristic points of a renal tumor are.

1. The large intestine is in front of the tumor. When either kidney is merely slightly enlarged, both large and small intestine will be in front of it, but, when the organ is so enlarged as to reach the anterior abdominal wall, the coils of the small intestine are pushed aside. The anatomic relation of the large intestine to the kidney, and the absence of a mesentery do not allow of the same mobility of the colon, which retains its position in front of the kidney. Hence an area of resonance can usually be obtained in front of a renal swelling. If the colon be empty, it can sometimes be felt in a thin subject and rolled by the finger on the surface of the tumor. Bowel is never placed in front of a splenic tumor, and only rarely in front of an hepatic tumor.

2. The area of dullness to percussion is continuous from the lateral aspect of the swelling to the mid line posteriorly, that is, there is no area of resonance between the mass and the vertebral spines, as in a splenic or ovarian tumor.

3. A renal tumor usually retains the shape of the kidney; it is rounded at its borders and poles, and does not possess an edge or sharp margin, as in splenic or hepatic swellings.

4. A renal tumor in the process of enlargement projects forward and downward. It may fill up the natural hollow of the loin, but very seldom causes any prominence posteriorly. A perinephritic abscess, which often simulates a renal swelling, usually causes distinct prominence in the loin.

5. A renal tumor does not descend so freely upon deep inspiration as a splenic or hepatic tumor. A renal tumor may be movable downward and inward, or may be fixed in the loin by preceding inflammation. An enlarged kidney can be felt with ease bimanually, and, if grasped between the two hands, can be pushed into the loin.

6. When a renal tumor is large enough to reach the anterior abdominal wall, it commonly comes in contact with the latter at the level of the umbilicus, at the same time bulging out the iliocostal space. There is usually a line of resonance between the upper margin of the tumor and the hepatic dullness.

Altho, from the above physical characters, it would seem that a renal tumor should present little difficulty in diagnosis, yet it is by no means infrequent to find that a tumor posesssing several of these characters may give rise to considerable doubt in the determination of the organ from which it arises. The following points will assist in the diagnosis of renal swellings from other tumors with which they are likely to be confused.

1. Tumors of the gallbladder are placed immediately below the costal margin, so that no interval exists between the tumor and the lower margin of the liver. They are usually oval in outline, with the long axis in the line between the ninth costal cartilage of the right side and the umbilicus; are freely movable with the respiratory movements, and movable from side to side about an axis at the costal margin. There is dullness on percussion over them, and they cannot be felt in the loin or be grasped bimanually. With a tumor of the gallbladder there may be attacks of colic, with or without jaundice.

2. Enlargements of the liver pass downward from beneath the costal margin, so that there is no line of resonance or area in which the hand can be depressed, between the tumor and the costal margin. Hepatic tumors do not impair the normal resonance in the loin in the same manner as a renal tumor.

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3. Enlargements of spleen descend from beneath the left costal margin, and have no bowel in front of them. The edge of a splenic tumor is usually well defined and often notched, and there is resonance between the posterior aspect of the tumor and the spinal column. A splenic tumor is more movable than a renal tumor. A blood count is of great importance in splenic enlargements.

4. Perinephritic effusions, whether of blood, pus or urine may form a tumor in the loin which upon physical examination may be mistaken for a renal swelling. A perinephritic effusion may arise from some suppurative condition of the kidney, so that the previous history and examination of the urine will not assist in differentiation, or it may be due to conditions entirely distinct from renal disease. An effusion of blood around the kidney is, in nearly all cases, caused by injury to the loin, and will be accompanied by other signs of injury. A perinephritic abscess forms a much more ill-defined tumor than that caused by a renal swelling, is more acute in its general symptoms, such as pain and temperature and fills up the iliocostal space. The skin over it may be thickened or edematous, and fluctuation may be felt to be more superficial than in a renal swelling. A perinephritic abscess is most likely to result from suppuration about a carcinoma of the large bowel, from appendiceal inflammation, or from suppuration in a perinephritic hematoma due to injury.

5. Tumors arising from the pelvic organs, from the ovary or uterus, may in some cases simulate renal tumors. An ovarian cyst with a long pedicle occupying the loin has frequently been mistaken for an enlarged or movable kidney, and any sudden attacks of pain, occurring from torsion of the pedicle, may be looked upon as due to renal colic. The usual ovarian cyst or uterine fibroid will seldom be confused with a renal swelling, for it is placed in the middle line of the body, can be felt to come from the pelvis, and can be felt readily upon bimanual vaginal examination to be attached to the uterus or its appendages. These tumors also give rise to dullness anteriorly, and do not alter the normal resonance in the loin. In cases of malignant ovarian tumors associated with ascites, the lumbar resonance may be lost but, on turning the patient over upon one side, the previously dull note becomes replaced by resonance in the uppermost loin.

6. Fecal accumulations in the colon, cecum, or sigmoid flexure may give rise to a tumor and pain of a colicky nature in the loin. They will be distinguished from renal swellings by the general intestinal symptoms, flatulence and the changes in form consequent on the administration of large enemata. It must be remembered that a patient with a collection of feces in the colon may not complain of constipation but may, in fact, have a small daily evacuation from an overloaded bowel.

7. Inflammatory thickenings about the appendix will be diagnosed from pain and by the swelling being in the iliac fossa rather than in the loin. In some cases, however, the pain may be referred to the lumbar region, or an appendiceal inflammatory thickening may spread upward. The onset of the trouble, the acute symptoms, and the febrile disturbance will usually distinguish these cases from renal lesions.

8. Malignant growths of the large intestine, especially of the ascending or descending colon, may form a tumor in the loin which closely resembles a renal swelling. The mass formed by the growth may be grasped bimanually, is movable in the same direction as a renal tumor, and comes forward under the costal margin. The percussion note over the front of the lump is resonant and there is usually an aching pain in the loin. If the growth has infiltrated thru the wall of the bowel uncovered by peritoneum, the perirenal tissues may be thickened, or albuminuria may be produced by direct invasion of the kidney, when the case will even more resemble a renal lesion.

Cancer of the large intestine should be suspected, if there is any irregularity in the action of the bowels, mucus or blood in the movements, or any symptom of commencing obstruction in the intestine. The tumor may be irregular and nodular, whereas a renal tumor presents rounded margins. The occurrence of a tumor in either side, associated with discomfort or palpable distention of the cecum from the accumulation of feces, would render a growth in the colon the more suspicious. The appearance seen with the x-ray, at a suitable interval after a barium or bismuth meal, may assist the diagnosis by showing organic intestinal stenosis, or a pylogram of the kidney on that side to rule out that organ.

9. Tumors of the omentum, mesentery or pancreas, either cystic or malignant, are more median in position, do not project into the loin, and seldom resemble a renal tumor.

A kidney may be enlarged, but not yet palpable, from the fact that it is either wholly above the costal margin or obscured by the liver or the thick abdominal walls of the patient. On the other hand, a kidney may be so diseased as to be functionless and shrunken, when it cannot be felt, but the remaining organ may be enlarged in a compensatory degree and may be distinctly palpable. One must remember the danger of regarding an enlarged kidney as the diseased organ, when it is in reality the only functionating one. Aching pain may be present on the functional side, as a renoreflex pain from the disease on the other side.

The kidney of normal size and position is not palpable from the abdomen, or on bimanual examination with the one hand on the loin; but in a thin subject the lower pole may be felt to descend between the hands, on the patient taking a full inspiration. If, therefore, a kidney can be felt easily on bimanual examination, it is either unduly movable or enlarged. It is often diffcult to say whether a kidney, which is movable, is also enlarged to a slight degree, and a kidney, which was thought clinically to be enlarged, has often been found to be of normal size when exposed. This is in part due to the thick coverings of the abdominal wall or to the amount of fat surrounding the organ.

If the kidney is definitely enlarged, it remains to determine the nature of the enlargement. In this one is guided, not only by the physical characters of the tumor present, but also by other symptoms that are associated with it, more especially, perhaps, by the altered characters of the urine. The kidney may be enlarged only slightly as in tuberculosis, commencing hydronephrosis, or carcinoma; or may be enlarged to a considerable degree in polycystic disease, hydro- or pyonephrosis, and in some forms of malignant growth. From the physical examination of the enlarged organ it is often possible to say that the swelling is fluid or solid in nature, but it is seldom that a true diagnosis of the lesion can be made from palpation of the kidney above. In the following diseases, in which renal enlargement is usually present, the diagnosis must be arrived at by the consideration of associated symptoms and a thoro urologic examination.

ROUTINE EXAMINATION TO BE FOLLOWED

1. Careful consideration of the history with special emphasis on previous genitourinary diseases.

2. Complete physical examination.

3. Cystoscopic examination to determine capacity, inflammation, tumors and stones of the bladder, involvement of ureteral orifices, blood and pus from the ureteral orifices.

4. Ureteral catherization to determine presence of ureters, their course, location of stones and strictures, and to obtain a specimen of urine from each kidney for microscopic, chemical, and bacteriologic study.

5. Estimation of the functional capacity of each kidney. This is done by injecting 1 cc. of the phenosulphophthaline solution into a vein of the arm, and collecting a specimen from each kidney by means of ureteral catheters. This is allowed to drop into bottles containing sodium hydroxide to restore the original color. The percentage is then read for each kidney by means of a colorimeter.

6. Pyelography, that is, the injection into the renal pelvis, by means of a ureteral catheter, of some substance such as sodium bromide, sodium iodide in 20 per cent solution, or collargol in a 7 per cent solution, followed immediately by radiography. This will determine the presence, position, size and shape of the kidney pelvis.

7. X-ray, to show catheters in ureters for location of strictures, stones in ureters and kidneys, and shadow outline of tumor mass in many cases.

Hydronephrosis[2]. The pain in this condition is usually unilateral and generally a dull ache in the loin and back. When accompanied by kinks, strictures, calculus or tumors, it becomes colicky in character, and the pain is increased by physical exercise just as in nephroptosis. The pelvis fills up, the pain increases steadily until there is full throbbing pain in the loin and back. It may become quite severe. A tumor thus formed is oval or rounded, smooth, and gives a sense of tenseness or elasticity but occasionally distinct fluctuations may be obtained. Finally the ureter straightens out, or is relieved by a catheter, when there is a sudden gush of urine and the patient is suddenly relieved, leaving only tenderness in that region. In these cases the renal function is usually normal; urine analysis, unless an extremely chronic case, is normal.

Therefore, the diagnosis is made from (1) the history, (2) the tumor mass in the side, (3) the amount of urine, if relieved by a catheter, (4) pyelography. The capacity shows considerable increase over the normal 5 cc., often taking 25-75 cc.

Pyonephrosis.[3] Pyonephrosis is that form of infection in the kidney, in which suppuration is combined with obstruction to the outflow of urine. This condition may result from infection, associated with hydronephrosis or with stones in the pelvis or renal tissue. The physical findings are practically the same as in hydronephrosis. The diagnosis is made from (1) the long history of the case, (2) cystoscopic examination, in which cases there is often chronic cystitis, inflammation or edema of the ureteral orifice on the affected side; and in some cases it is possible to see pus oozing from the orifice, (3) catheterization of the ureters, the specimens subjected to microscopic, chemical, and bacteriologic examination, (4) pyelogram and x-ray to show the size and shape of the pelvis.

Calculus[2]. In the study of the pain incident to renal calculus we find two general types: (1) colic, occurring in about 50 per cent of cases, (2) fixed pains. This colic is well understood and easily recognized. It comes on acutely, usually starting in the groin and radiates into the kidney or down the thigh. It may last a few minutes or many hours. It may occur daily or only at long intervals of months or years. Often there is nausea and vomiting. A common occurrence is abdominal distention, with severe pains in the abdomen, resembling obstruction of the bowel. Walking or exercise may increase the pain, or it may develop thru the night when the patient is at perfect rest.

It is the fixed pains, however, which are of the most interest to us. These are mostly over the small of the back, tho they may be anterior. They are of all degrees of severity, and often attributed to lumbago, gall-stones, chronic appendicitis and many other conditions. The pain is increased by bodily motions, worry, mental fatigue and anxiety. Accompanying these pains there is hematuria, with at least the presence of red blood corpuscles in the urine. In a large percentage (80-85) there is vesicle irritation. Gastric symptoms are noticed, as tympany, nausea, vomiting and indigestion.

The diagnosis briefly consists of a careful consideration of the history, a complete physical examination. Where an abdominal tumor may be found in cases of obstruction, the kidney is frequently tender to palpation and percussion.

Cystoscopy and ureteral catheterization are most valuable, either to see or locate a calculus. The divided renal function gives more information. The waxed tipped catheter is a great aid, and the x-ray is of the greatest importance, especially combined with the ureteral catheter, in affording us knowledge as to the number, size, shape and location of the calculi.

Urine analysis shows the presence of albumin, which is common. Casts often occur, pus and bacteria when infection is present.

Tuberculosis[2]. Of all the back aches of renal origin tuberculosis affords us one of the most characteristic. It is a chronic disease, usually secondary and seldom manifests acute symptoms.

The pain is characterized as dragging, heavy and distressing, which rarely radiates, unless pieces of pus or debris are caught in the ureter, when colic, simulating a stone, is produced with the formation of a tumor mass in the loin in a small percentage of cases. This pain, accompanied by a frequence of urination and vesicle irritation, and especially, when associated with evidence of glandular tuberculosis, such as scars of the neck, history or evidence of bone or joint tuberculosis, a nodule in the prostate or in the seminal vesicles, should immediately arouse our suspicions that we are dealing with a case of renal tuberculosis.

This should, however, be further clarified by a cystoscopic examination of the bladder, which would show the pathology to be one of three types: (1) normal bladder, except slight edema around the orifice, with jets of blood coming from the involved side, (2) marked inflammation or contraction of the bladder[5], (3) characteristic tubercles or localized ulcerated areas, surrounding or adjacent to the infected meatus.

Ureteral catheterization should be done to obtain separate specimens, not only for microscopic, chemical, and bacteriologic examination, but to determine the location of the involvement.

The demonstration of the origin of pus and tubercle bacilli from one side and the presence of clear urine with negative findings from the opposite side establishes the diagnosis[4].

If, however, we cannot demonstrate the tubercle bacilli, and the clinical symptoms and signs lead us to a diagnosis of tuberculosis, one may then resort to the use of a guinea pig. This is done by crushing the inguinal glands, and injecting into them the sediment of a centrifuged specimen, and a microscopic examination of slides made from the glands ten to fifteen days later; or one may remove a small specimen of the involved bladder mucosa, (as suggested by Buerger) by means of the operating cystoscope, for microscopic examination.

Tumors of the Kidney[3]. Dr. E. S. Judd, of Rochester, Minn., in a study of renal tumors, finds benign tumors of the kidney to be very rare. Congenital, bilateral, polycystic disease may be found in children or adults, practically always bilateral, altho one may be larger than the other. In adults the disease causes practically no trouble except the presence of the tumor in the early stages, but later symptoms of renal insufficiency develop. This condition is not particularly amenable to surgical treatment.

Solitary cysts that may be enucleated from the kidney are rarely seen. Kretschmer[6] recently reviewed the literature and finds but forty-eight cases reported since 1906, the forty-eighth case being reported by him. He states there are no symptoms accompanying this condition (at least in the case he reported). The patient usually discovers the lump in his side and reports for treatment.

The urine is usually negative, unless secondarily infected, the pyelogram may or may not show enlargement of the pelvis. It is seldom that a true diagnosis is made before operation, and then it is usually arrived at by exclusion.

The common tumors of the kidneys[3] are malignant, either hypernephroma or carcinoma in the adult, or sarcoma in children. Very rarely we encounter such tumors as adenoma, papilloma and fibroma. They are so rare that we will not discuss them at present.

The malignant tumors of the kidney give rise either to an irregular nodular enlargement or to a general, uniform, solid tumor. There is usually aching pain in the loin, with intermittent attacks of profuse hematuria, the latter occurring as soon as the growth has infiltrated the renal pelvis. The bleeding may be so profuse that clots are formed in the renal calices, pyramidal in shape, which in their passage down the ureter give rise to typical renal colic. The true carcinoma and sarcoma give rise to renal enlargement and intermittent hematuria, usually extremely malignant, and are accompanied by early metastases.

The more common type of renal tumor[1] is in the cortical portion of the kidney—the hypernephroma. It was formerly supposed to arise in small aberrant areas of suprarenal tissue which are frequently found in this situation. Recent observers maintain that these tumors arise from the renal elements. The tumors commonly arise in the upper pole of the kidney, are of yellow or brown color and are usually fairly well defined from the renal tissue. Microscopically their structure is similar to that of the suprarenal gland, and their metastases are of the same nature. They were formerly classified as angiosarcoma, alveolar sarcoma, endothelioma, or carcinoma, but are now classified under the term hypernephroma.

They form a comparatively slowly growing tumor of the kidney, and give rise to less severe symptoms than the true sarcoma or carcinoma. There is aching in the loin, and enlargement of the kidney may be found on examination, but at first the symptoms are slight. Hematuria occurs without any apparent exciting cause, and there may be renal colic from the passage of clots down the ureter; the tumor may be of fair size before any hematuria is noticed. The diagnosis is further clarified by the x-ray, showing a tumor mass. The pyelogram shows the position of the pelvis and its irregularities.

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TUBERCULOSIS OF THE ILEOCECAL REGION WITH ESPECIAL REFERENCE TO THE CECUM*

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Tuberculosis of the ileocecal region, especially the hypertrophic or surgical type which is usually confined to the cecum, has not been discussed so frequently as to be irksome. This fact, together with some of the interesting features of the case that I have to report, has led me to present this paper at this time.

R. G. female, white, aged 30. First seen by me on the evening of March 13, 1922.

Family history. Twin sister died at age of seventeen from pulmonary tuberculosis. One sister, 25 years of age, had empyema two years ago following influenza. Sinus from thoracotomy still draining.

Past history. Has always been of delicate health. At the age of fifteen she was operated upon for appendicitis which proved to be tuberculous. Soon after this she developed a fecal fistula and was operated on six times subsequently for relief of this condition. Her sixth operation was an ileosigmoidostomy which diverted the feces from the fistulous opening in the right iliac region, but the fistulae themselves never closed completely. With the exception of a discharge of mucus from this region her health had been very good for seven years after the ileosigmoidostomy, i.e., until May, 1921.

In May, 1921, she began to have indefinite, irregular symptoms of intestinal obstruction, i.e., constipation, general cramp-like abdominal pains, meteorism, gurgling and splashing sensations, especially in the left iliac region, chills, vomiting and marked prostration. At first these attacks came on every month, later they would appear every week or ten days. These attacks lasted usually three or four days and were at first overcome by large enemas and cathartics. Later these measures procured little or no relief. When first seen by me she was in the third day of one of these attacks.

Physical examination showed a moderately well nourished woman of about thirty. Pulse 90. Temperature 98.6. Respiration 20. The abdomen showed scar tissue in the right iliac region with two fistulous openings discharging mucus, scars of incisions in the right and left rectus, and a bulging mass in the left iliac region extending over to the median line, which gave one the sensation of dilated intestine beneath the palpating hand. She was expelling gas from the rectum and did not seem to be in great pain. A probable diagnosis of incomplete intestinal obstruction was made and she was sent to the hospital for observation.

At the hospital an enema was ordered which was expelled, together with about an ounce of bright red blood. She continued to pass some blood and mucus for the next three days. Laboratory examination made at this time showed:

Blood: Leukocytes 15,900, 81 per cent polymorphonuclear leukocytes, red blood cells 5,100,000, hemoglobin 90 per cent.

Stools: Negative for t.b. bacilli, parasites, eggs or ova of parasites. Smears of discharge from fistula negative for tuberculosis.

X-Ray: X-ray of chest suggests a possible old t.b. focus which has healed. X-ray of abdomen shows a filling defect in the cecum and ascending colon and suggests that an ileosigmoidostmy had been done at some previous time. X-ray of fistula made by Dr. DeMuralt gives excellent outlines of the fistulous tract. Physical and laboratory tests were otherwise negative.

The patient was kept under observation for one week. Except for the discharge of mucus from the right iliac sinus, and of some blood and mucus from her stools, the findings were largely negative. Largely because of the fear on the part of the patient of a recurrence of an attack of abdominal cramps and her insistence for relief, an exploratory operation was decided upon.

Operation March 25. Dr. Alvin Baird assisted me in this operation and also in the second operation. The abdomen was opened thru the old right rectus incision. The omentum was adherent to the abdominal wall and intestines.

Findings: In the region of the sigmoid a side to side anastomosis was found between the sigmoid and the terminal portion of the ileum. The blind end of the ileum was dilated enormously and reached over to the right iliac fossa. The opening into the sigmoid seemed to be about one and one-half inches in length. The blind terminal four or five inches of ileum opening into the cecum appeared to be normal in size and appearance.

The cecum and ascending colon were bound down by a mass of adhesions. The different walls could not be definitely determined. The anterior wall in the region of the sinuses was adherent to the anterior abdominal wall. The small intestine and the rest of the large intestine showed no sign of tuberculosis.

Procedure: The old ileosigmoidostomy was taken down and the sigmoid opening closed. About two feet of dilated ileum at the site of the anastomosis was resected. The open end of the ileum was closed and a lateral anastomosis with the transverse colon was made just distal to the hepatic flexture. The abdomen was closed with a small drain down to the peritoneum. On account of the time taken to do this work and the general condition of the patient the second part of the operation was put off until a later date. Convalescence, with the exception of two stitch abscesses in the wound, was uneventful. The patient gained weight and strength rapidly and felt better than she had for the past year.

Second operation, May 10. The abdomen was opened again thru the scar over the right rectus muscle. Adhesions were abundant and annoying. The site of the anastomosis of the ileum and transverse colon was examined and found to be in good shape. The transverse colon just proximal to the anastomosis with the ileum was clamped doubly and divided by cautery. The cut end adjacent to the anastomosis was closed by double layers of cat gut and linen sutures. The proximal part of the transverse colon, hepatic flextures, ascending colon, cecum, and the stump of the terminal ileum were resected. At the site of the sinuses in the right iliac fossa an area of about two by two and one-half inches of abdominal wall was found to be so involved in the fistulous tract that it was deemed unwise to attempt to save it. It was therefore resected. The raw surfaces in the abdomen were then covered as well as possible with peritonem and the wound in the right rectus was closed. A defect in the abdominal wall in the region of the resected sinus openings was filled by taking a window flap of fascia lata from the thigh and turning it over onto the abdomen in such a manner that its attachment along the crest of the ileum was still intact and so that, when applied to the abdomen, the portion normally covered with superficial fat was in contact with the peritoneum and the muscular surface was in contact with the skin and superficial fascia of the abdomen. This provided for the fascial layers. The skin came together without undue tension. A small gutta percha drain was left down to the peritoneum. Convalescence has thus far been uneventful.*

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The pathologic report by Dr. Millett is as follows:

Tissue: Bowels, cecum, and stump of ileum.

Clinical diagnosis, mucous fistula, right iliac region.

Gross examination: Tissue removed weighs 210 grams. It consists of a very much thickened cecum with about three inches of ileum attached, the end of which is closed. The cecum wall is very much thickened and only a very small lumen is present. The thickening is also present in the wall of the ileum. The tissue is very fibrous and resistant. Mucosa lines the cecum and pouch of ileum.

Microscopic examination: Sections show muscle coat of the bowel slightly thicker than normal. The submucosa is very much thickened, due to fat and fibrous tissue. The mucosa is intact and about normal in appearance. There are no tubercles noted in either section from the cecum or the ileum. However, in many areas the arrangement of the fibrous tissue resembles degenerated tuberculosis.

In looking up the literature on the subject some interesting facts have been noted. Our knowledge of this condition dates back to Durant[1], whose article appeared in 1890. In 1891 Billroth[2], in Vienna, and Pillett, in Paris, called attention to the fact that certain lesions in the cecum were tuberculous which had formerly been considered carcinomatous. Czerny[3], Konig[3], Conrath[3], Hofmeister[3], and Hartman[2] at about the same time added valuable data to this subject.

Etiologically two classes are described. First, primary tuberculousis of the ileocecal region which affects chiefly the cecum and is of especial interest to the surgeon because of the possibility of its complete eradication. This form is comparatively rare. Second, tuberculosis of the bowel secondary to pulmonary tuberculosis or to tuberculous lesions elsewhere. All writers agree that this class is very common. Thus Eisenhardt[4], in 1000 autospsies on tuberculosis patients, found it 563 times. Hemmeter (*Jour. A.M.A.* 1908) in 56 autopsies on tuberculosis patients, found tuberculous lesions in the intestines in every case. Louis[5] found it in five-sixths of his cases, Bayle and Lebert[5] in two-thirds of their cases, Williams in 81 per cent of his cases, and Percy Kidd in 71 per cent of his cases.

As to frequency of the primary form there seems to be a difference of opinion. Conrath is of the opinion that in children it is a primary infection but not in adults. Weiner[6], on the other hand, in his conclusions, states that ileocecal tuberculosis is usually a primrary lesions. Wagner (*Jour. A.M.A.* Abstract), writing on the frequency of intestinal tuberculosis in Berlin, states that in autopsies on 410 cadavers, he found primary tuberculosis in 20 per cent of his cases. It occurs most frequently in children. As to sex, it occurs about equally in male and female. From twenty to forty years of age seems to be the most common time for this affection. As to location Hartman found that in 85 per cent of all cases of intestinal tuberculosis the ileocecal region was affected and that in 9 per cent only the ileocecal region was affected. Predisposing factors are preexisting ileocecal disease, appendicitis, anatomic relations, ileum meeting cecum at a right angle, stagnation of fecal stream in cecum and ascending colon favored by antiperistalsis in that region (Canon).

Pathologically, two distinct types are found:

1. The enteroperitoneal form, in which the tubercles occur in the mucous membrane surrounded by an inflammatory zone. Several of these tubercles coalesce and form a flat ulcer with undermined edges. These ulcers usually run transversely in line of the lymphatics and blood vessels except in the region of Peyer's patches. Ulcers may heal, causing some stenosis. Eisenhardt states that strictures occur in 25 per cent of all cases. Tubercles may develop on the serosa, the lympathics become involved, and adhesive peritonitis develop. A palpable tumor may form or abscess develop.

2. The hypertrophic or surgical type which may be primary, and is usually located in the

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* October 10, 1922. Progress from the date of last operation until present date has been uneventful. In the region of the original sinuses in the right iliac region, where the fascial flap from fascia lata had been turned over to fill the defect of resected sinuses, a slough about the thickness of a lead pencil and about two inches in length developed which from appearances came from redundant portions of fascia lata flap. This loosened up and was thrown off about June 20. The abdominal wound is now entirely healed There is no sign of hernia. The patient is on a regular diet and is attending to her regular duties which are those of a nurse maid. She has gained considerable weight and is apparently in perfect health.

cecum alone, but may extend up the ascending colon. Sharples (*Northwest Med.* 1907) describes an unusual case in which the process involved, in an unrelenting progressive course, first the cecum, then the ascending colon and transverse colon. Eventually an ileosigmoidostomy was done and the rest of the large bowel was resected. This is an exceptional case. The disease usually originates in the submucosa, less often in the subperitoneal cellulofibrous tissue. All coats of the intestine may be involved, altho the serosa often shows no sign of the disease. The walls of the intestine become enormously thickened and the lumen of the bowel consequently becomes narrowed. The mucous membrane may become markedly thickened with hypertrophy of the glands and at times polypoid projections are found. Externally the pericecal fat often undergoes a so called fibrolipomatous change, thus limiting the infection. This change augurs well for a favorable prognosis. Adhesions, if any, are often late. Free motility is considered an important differential sign. Tuberculosis lesions are often hard to find in the sectioned specimens. The appendix and mesenteric glands are often secondarily involved.

A third type described by some authors, and which is occasionally associated with the ulcerative type, is:

3. The nodular type, in which the lesion is made up of conglomerate tubercles which are principally extraluminal in the early stages. These nodules are frequently solitary and apparently unaccompanied by tuberculosis elsewhere.

Symptoms.—There are no characteristic symptoms. The onset is usually insidious. The patient may be well nourished, tho more often the subject of malnutrition, thin and anemic. Constipation alternating with diarrhea, with an occasional trace of blood in the stools, may be an early symptom. There is often tenderness and rigidity in the region of the ileocecal valve. Constipation with no diarrhea is often a symptom. The progress is slow. Sooner or later symptoms of obstruction, i. e., chills, vomiting, gurgling, meteorism, splashing, and visible peristalsis, often appear. Still later a tumor in the region of the cecum, at first movable, later partly adherent to neighboring structures, may be found. Somtimes tumor is the first symptom noted. Abscess may form and perforate into neighboring structures. Fecal fistula may develop. There is comparatively little fever in this type of tuberculosis.

Diagnosis.—Diagnosis is frequently missed until operation and even then may not be made until the development of sinus or fecal fistula which persists and suggests the diagnosis. Carman (Mayo Clinics 1920) and Brown, Sampson and Heise (Trudeau Sanitarium, 1920) have pointed out and emphasized the importance of x-ray in the early diagnosis of intestinal tuberculosis. The latter authors, in a routine examination of 89 unselected cases of pulmonary tuberculosis, found that 12 per cent of the cases had gastric retention after eight hours and concluded from this and other observations that gastric retention occurrs more frequently in cases of proved intestinal tuberculosis than in cases apparently negative. In 93 per cent there was no filling defect in the proximal half of the colon, if enough barium had reached the sites to overfill them. In four of the six remaining cases (proved ileocecal tuberculosis cases) different pictures were shown; either absence of cecum or ascending colon shadows at the time (6 or 8 hours), when more than enough barium to fill the sites had passed. In two or three cases barium was seen in the terminal ileum at the sixth hour, while in one-half to one hour later it was in the transverse or descending colon. In these four cases complete elimination of the barium took place in twenty-four hours. In the negative cases complete elimination of the barium took place between twenty-four and one hundred and twenty hours.

R. D. Carman, on the other hand, does not lay so much stress on hypermotility and states "50 per cent of our patients with tuberculosis colitis suffered with constipation or delayed motility." He further states that the roentgenologic signs of tuberculosis are first, filling defect; second, spastic phenomena; and, third, obstruction. He gives Stirling (1911) credit for first pointing out the absence of the physiologic barium shadow in the cecum and ascending colon in tuberculosis of the ileocecal coil. He points out that, while filling defect and the localized absence of barium shadow in the cecum and the ascending colon are not characteristic of tuberculous colitis and occur also in ulcerative carcinoma and chronic ulcerative colitis, nevertheless these phenomena, occurring in lesions of the cecum and ascending colon, suggest strongly a tuberculous condition. This suggestion is strengthened, if tuberculosis is found elsewhere in the body. What by others has been interpreted as hypermotility he attributes either to loss of function of the intestinal walls due to infiltration or to spasm of the bowel.

Differential diagnosis must be made from carcinoma, chronic ulcerative colitis and other conditions which have a tendency to form stricture, as syphlis, new growths not carcinomatous, bands, dysentery, typhoid diverticultis, etc. In reading the literature on the subject one is amazed at the frequency with which this condition is confused with appendicitis. As both conditions may coexist, this mistake may at times be unavoidable. X-ray examination and careful history should be of great help in determining the true condition.

Other points of importance, as pointed out by Rogers[8], are careful history, painstaking examination, long duration of symptoms and persistence of tumor. Treatment depends largely on the type of intestinal tuberculosis we are dealing with. Hartman, in 1907, advised instestinal resection in the hypertrophic form, together with the removal of the glands in the ileocecal angle. When resection is too dangerous he advises intestinal exclusion. M. Guerin[15] reports six cases of resection of the ileocecal segment for tuberculosis with recovery in all but one case which was complicated with advanced pulmonary tuberculosis. Rogers, Ludlow[9], Walker[10], Neil[11] and Erdman[12] report cases and urge resection. Bevan[13] urges radical resection of tuberculous intestine always where feasible, instead of side-tracking. The Mayo Clinics, 1920, report nine cases, four of which were suitable for operation. Resection was done. Coffey[14], in February, 1921, in a report on seven cases which, from their description, belonged largely to the more disseminated type of tuberculosis, advises ileocostomy with the purpose of putting the diseased segment below the ileocostomy at rest for a variable length of time or until lesions are healed. At times he combines this with ileosigmoidostomy. When the tuberculous lesions are healed, the ileostomy is closed by the Mikulicz method. He quotes Archibald as bearing out his conclusions.

The following pathologic report by Harriet J. Lawrence, M.D., which is of great importance in so far as the diagnosis of the case reported at the beginning of this paper is concerned, was not completed at the time that this paper was read. This report is the only conclusive evidence that the lesion described in the cecum was tuberculous.

This report follows: (The material examined was mucous discharge from sinuses in right iliac region, taken April 20, i.e., after the first and before the second operation.)

Direct smear: Gram-positive diplococci, gram-negative rods; tubercle bacilli, none found.

Culture: Staphylococcus aureus, colon bacilli.

Animal inoculation: Guinea pig inoculated April 20, developed ulcer at the site of inoculation; lost in weight. At autopsy, May 23, was found to be poorly nourished, with unhealed ulcer at site of inoculation, and enlarged inguinal glands, from which tubercle bacilli were obtained in stained smears.

CONCLUSIONS

1. Hypertrophic tuberculosis of the cecum and ascending colon is often a primary disease which can frequently be completely eradicated. As emphasized especially by Guerin, resection in these cases is remarkably well borne by the patient and is by all odds the method of choice.

2. As pointed out by W. J. Mayo (Binnie, Regional Surgery), an end to end or an end to side anastomosis of the small and large bowel is preferable to a lateral anastomosis, when the portion of the large bowel used for anastomosis lies distal to the splenic flexture.

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EDITORIAL

EPINEPHRIN AND MUSCULAR EXERCISE

Considerable uncertainty has existed during the past regarding the systemic effects of epinephrin. Every physician is familiar with the immediate and striking results which are often obtained from the administration of adrenalin. Attempts have been made to employ this drug for a prolonged period of time for certain chronic disturbances, but the information is imparted that its effect is evanescent and can be depended upon only for brief periods. Some instructive results, conducted on cats, are reported from the experiments of Hartman, Waite and McCordock* as to the relation of epinephrin to muscular exercise. The animal was made to run in a treadmill which was revolved at regulated speed and an accurate record kept of the distance traveled in a certain time. One pupil of the animal was denervated. Altho it responded to light like the normal pupil, when there was no increase in epinephrin, the denervated pupil dilated in a marked degree in proportion to the increase of eprinephrin set free by exercise. One adrenal was denervated and so prepared by rubber tissue that the nerves could not regenerate. Following exercise in the treadmill, dilatation resulted in the denervated pupil in a degree dependent upon many factors of the experiment. If the normal adrenal was then removed, subsequent work in the treadmill produced no dilatation.

It was noted, after the work of the animal began, there was a latent period of one and a half to three minutes before dilatation began in the pupil, following which the dilatation soon increased to a maximum, depending on the intensity of the exercise and the characteristics of the animal. Greater dilatation was noted in the denervated pupils of young animals than in adults. Also, the response was sooner obtained in excitable and nervous individuals than in the larger, clumsier animals. It was found that the subsequent dilatation in the denervated pupil indicated a continued outpour of epinephrin after cessation of muscular activity from periods of some minutes to three or four hours. As a rule, the greater the dilatation the greater the outpouring of epinephrin and the longer the after effect was prolonged. Whenever evidence of the increase of epinephrin was observed during exercise, the animal could work harder and travel farther than without the increase. An attempt was made to determine the amount of epinephrin secreted by the injection of adrenalin and a comparison of the dilatation produced by this and exercise. Some rough results were obtained in this manner but not of sufficient accuracy to be of value. The injection of adrenalin produced interesting results. This was found to be most effective and of longer duration when injected intramuscularly. An animal which would travel a certain distance in a certain number of minutes would be able to increase the distance as well as the period of work by the injection of adrenalin. An animal in which each adrenal had been in turn destroyed by cauterization over a period of several weeks and which was so weak that it could do practically no work in the treadmill, received a series of intramuscular injections of adrenalin. The animal jumped up with vigor and worked in the treadmill for a period of ten minutes before exhaustion.

Interesting observations were made regarding "warming up" and "second wind." The animal was worked in the treadmill for six minutes when dilatation begun to appear. During the next ten minutes he became fatigued and traveled at a slower rate, accompanied by decreased dilatation. At the end of another eleven minutes he appeared to have gained his "second wind," ran faster and at a higher rate per minute. In another case the animal was made to work and rest for short alternate periods, after which he worked for longer periods at greater speed and increased pupilary dilatation. The advantage to the athlete of "warming up" before a contest is probably explained in the same manner, his preliminary work starting the epinephrin secretion which gives him the vigor and strength for a subsequent effort. A similar explanation is suggested for the "second wind" which is familiar to all runners. It has been noted that adrenalin injections improve the running of the individual, which is in line with the results obtained in these animal experiments.

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* Hartman, F. A., Waite, R. H., McCordock, H. A.; The Liberation of Epinephrin During Muscular Exercise. Am. Jour. Physiol. 62-225. (Oct.) 1922.

INFANT MORTALITY RATE

The recently issued statistic from the Bureau of the Census for 1921 offer interesting data concerning the infant mortality in the birth registration area in the United States. Special satisfaction is obtained therefrom by the people of the Pacific Northwest, when it is noticed that Oregon is accorded the lowest mortality rate for infants under one year of age per one thousand births. The rate for that state is 51, with Washington second at 55. There are only two other states with a rate below 60, Minnesota and Nebraska both being recorded 59. Curiously, it is observed that the lowest rate for any city is East Hartford, Conn., which is recorded as 24. Following that come Hoquiam, Wash., with 29, Pasadena, Calif., with 31, Salem, Ore., with 35. Only thirteen other cities in the registration area have an infant death rate lower than 50. The fact that Oregon and Washington continue at the head of the list for lowest death rates among infants is a continued proof of the healthful conditions of this section of the country, which has been demonstrated by similar reports during past years.

CANCER WEEK

What has become known as National Cancer Week is now an established institution in many parts of the country. Certain cities in varous sections have adopted the practice of devoting time during a week of November for the instruction of the general public regarding cancer. This is a gratifying result of the persistent work of a few enthusiasts who for a number of years have worked continuously in an effort to interest the medical profession and the general public in this cancer campaign. It is left to the local committees in each city to carry out its own plans for presentation among the public of facts concerning cancer. Based on the interest shown in so many cities in the antituberculosis propaganada and publicity regarding venereal diseases, it is believed the possibility of checking the ravages of cancer by early diagnosis and suitable treatment may be effectually impressed on the minds of the people. The methods commonly adopted comprise lectures by physicians, motion picture exhibits, distribution of literature and cooperation on the part of the local press. It is gratifying that in all these campaigns for promotion of public health newspaper cooperation is always obtainable, which is a powerful factor in achieving permanent results.

THE OREGON STATE ASSOCIATION AND HEALTH EXPOSITION

The meeting of the Oregon State Medical Association last month was of a different character from anything in its past history. The change consisted in devoting one day of the meeting to an enterprise separate from the usual program of papers and discussions, the latter constituting the program of only one day. These papers dealt with problems of vital interest to the profession and elicited interesting discussions. Altho the strictly medical program was thus abbreviated, the cooperation of the profession with the Health Exposition will result in much more extensive medical influence and will be productive of much greater public improvement than could have followed an ordinary program.

The Health Exposition was the most extensive and elaborate effort along this line that has ever been presented in this section. Its success was due primarily to the efforts and influence of Dr. A. T. McCormack of Kentucky. He has inspired several such expositions in Eastern states. It could not have been presented, however, without the cooperation of the Portland medical profession. A committee of physicians from this city devoted time and labor to obtain the endorsement of the general public. The cooperation of the latter was demonstrated from the outset when the capacious auditorium held a record audience for the opening afternoon session. This exposition offered an extraordinary opportunity for the presentation to the public of much needed facts pertaining to public health and conditions of disease. Distinctive programs were prepared for each afternoon and evening for a period of ten days. The chief feature of each session was an address by men and women who are leaders in public health in the Northwest.

The most impressive aspect of the whole exposition centered about the numerous, enlightening exhibits. They occupied all the available space of the three floors of the great auditorium building. They dealt with all imaginable features of public health work, as well as the medical and dental sciences. One of the most striking exhibits was by the Medical Department of the University of Oregon. Distinctive booths explained the work of different departments, such as anatomy, physiology, biochemistry, bacteriology and pathology. Demonstrations were given of the various laboratory procedures, pathologic specimens illustrating disease being exhibited and explained. Facts of anatomy and physiology were demonstrated, of which the vast majority of the public are totally ignorant. Lack of space forbids the enumeration of the many instructive features which were daily demonstrated to large audiences. If such an exposition were presented in all our leading cities, it would be the most effective measure imaginable to help the public to think right on problems of health and disease.

The social feature of the medical meeting was the dinner on the first evening, under the auspices of the State Association and League for the Conservation of Public Health. Addresses of the evening particularly stressed the work of the public health leagues in Oregon, Washington and Idaho. The personality of Dr. McCormack especially impressed itself upon all, his grace of manner and eloquence in speech making him a worthy successor of his distinguished father, who for a generation directed the course of public health in the state of Kentucky. Every physician now practicing in that state received a license either from father or son. As a result of the influence of these two men, Kentucky stands as the model for the regulation of the scientific practice of medicine. A special demonstration of affectionate applause followed the eloquent address of Dr. Williamson, who by his relation to the organized profession of the country as a trustee of the American Medical Association, is the outstanding medical man in the Pacific Northwest. All who attended this annual meeting carried away pleasing and profitable reminiscences.

NEW ADVERTISEMENTS

Attention is called to the following advertisements that appear for the first time in this issue. The Baumanometor (page 19) is considered by many the leading sphygmomanometer. Providence Hospital, of Seattle (page 19), announces the opening of a Department of Dietetics. The Lang Drug Co., of Seattle (page 23), calls attention to its two stores.

MEDICAL NOTES

OREGON

Full-time Physician at University. During the coming year Dr. W. L. Livingston will devote all of his time as head physician of the University of Oregon, attending to the medical needs of the institution. Dr. W. E. Savage will be his assistant. They will have charge of the infirmary. Also four full-time nurses will assist the university medical staff.

Large Matriculation at Medical School. The University of Oregon Medical School, in Portland, began its session last month. There were sixty-four applicants for admission as first year students, of whom twenty were from Portland. The remainder were from universities and colleges in Oregon, Washington, California and Montana. They represent a large number of cities in these states.

Proposed Tuberculosis Hospital. The Government has no tuberculosis institution of its own in Oregon for the treatment of the tuberculous among disabled veterans. Its officials have under consideration the purchase of the Hahnemann Hospital in Portland for this purpose. This result has hinged upon a modification of the city ordinance which prohibits the treatment of tuberculosis within the city limits. It is proposed that the ordinance might be modified to exempt the government tuberculosis institution.

Population of State Hospital. The Oregon State Hospital for the Insane, at Salem, reported its population at the end of its biennial period, Oct. 1, as 1,845. This has been an increase over the number anticipated by the legislature. In spite of this, the superintendent, Dr. R. E. L. Steiner, reports a saving of $30,000 from the biennial appropriations of the legislature.

Meeting of Medical Society. The Homeopathic Medical Society of Oregon, held its 47th annual meeting at Portland, Oct. 3-4. The usual program of papers and clinical demonstrations were presented.

Geneva Delegate. Dr. Esther P. Lovejoy, of Portland, President of the Medical Women's International Association, was one of the American representatives at the conference of that organization held at Geneva, Switzerland, in September.

Dr. G. E. Henton, of Portland, has returned from a six months' trip to Europe, where he attended clincs in the leading cities of England and the continent.

Medical Wedding. Dr. Helen Ahrens, of Portland, was married Oct. 14, to Mr. Roy Carey, at her home in Seattle. She is now medical officer to the women of Reed College.

WASHINGTON

Not Dead But Much Alive. In the Transactions of the Washington House of Delegates, published in our October issue, among the list of deaths during the past year appeared the name of Dr. R. P. Moore, of Davenport. As under similar similar conditions during the life of Mark Twain, Dr. Moore states the report of his death is greatly exaggerated and he maintains his usual good health. This is a public apology on the part of those responsible for committing the unexplainable error of including his name among the deceased members of Washington Association.

Proposed Doctors' Office Building. A campaign is being carried on in Seattle among physicians and dentists for stockholders in the proposed doctors' building. Each investor subscribes to stock in proportion to the floor space he will use. A certain proportion of the subscription is paid in cash, while the balance will be absorbed by rental charges during a period of ten years. At the end of this time the building will become the property of the subscribers. It seems the most feasible proposition which has yet been proposed for the construction and ownership of an office building by the doctors and dentists.

Typhoid Traced to Milk. The typhoid epidemic at Comas has been officially traced to contaminated milk. It has heen determined that the infection originated from a carrier. The city water supply was declared free from infection. There are 17 patients in Camas and 22 in the surrounding country.

Hospital Dedicated. Last month the recently constructed wing of St. Anthony's Hospital was dedicated at Wenatchee. It is a five-story building of fireproof construction, containing all modern hospital appliances. The second, third and fourth floors contain wards and private rooms for patients, while the fifth floor contains the surgeries. Eventually the hospital will contain two more wings of this size.

Hospital for Narcotic Addicts. Last month a meeting was held in Seattle by representatives of numerous organizations to consider means for treating the army of drug habitues. While nothing was accomplished by the united gathering, the Seattle Lodge of Elks authorized the selection of a site for this purpose and the solicitation of funds for the erection of a suitable hospital.

Ambulant Ward Opened. At the Veterans' Hospital at Ft. Walla Walla a new building has been opened for ambulant patients. This will increase the hospital capacity to two hundred beds.

Appointed Assistant Supreme Examiner. Dr. Annie Reynolds, of Tacoma, has been appointed Assistant Supreme Medical Examiner for the Women's Benefit Association, with headquarters at Port Huron, Mich., where she will reside. She will be assistant to Dr. Ella Fifield, formerly of Tacoma, who is head of the medical board.

Appointed to State Board of Control. Miss Alice F. Stenholm, recent supervisor of nurses in Seattle public schools, has been appointed field worker of the juvenile department of the state board of control of Wisconsin. Dr. Maybelle M. Park, recently of Seattle, is the director of the department.

Novel Advertising. The druggist, Braley, of Seattle, has introduced a new feature in his advertising in the daily papers. Instead of reference directly to his business, he publishes a short dissertation on a disease, the last being cancer. A brief description of some of its terrors is followed by the injunction, "See your doctor."

Dr. Frederick Falk, of Seattle, has gone for a year's absence in Europe. It is reported that he will pursue medical studies and also make a special study of the languages of the different European countries.

Dr. Minnie B. Burdon has returned to Seattle after an absence of seven years, one year of which was spent at the Mayo Clinic.

New Officer Appointed. Dr. J. E. Vanderpool, of Walla Walla, has been appointed county health officer by the county commissioners, to succeed Dr. W. G. Gowan.

Dr. Irvine Finkenstein has located for practice at Puyallup. His former residence was Grand Island, Neb.

Dr. C. H. Doe, of Tacoma, has gone for a year's absence for study in medical institutions of Europe.

Medical Wedding. Dr. R. J. Sprowl, of Spokane, was married to Miss Jean Porter of that city, Oct. 7.

IDAHO

Hospital Opened. The Rexburg General Hospital has heen opened for the reception of patients. It is under the care of Dr. and Mrs. Rigby. It is open for the use of all physicians of that locality.

Hospital Under Construction. Work has been resumed on the Latter Day Saints' Hospital, at Idaho Falls. It will cost $400,000. About half of this amount has already been expended. It is expected that the institution will be completed by spring. It will have a capacity of two hundred beds. Later it is proposed to erect a home for nurses in connection with the hospital.

Inland Empire Meeting. Forty-five doctors of the Inland Empire attended a medical meeting in Moscow, Oct. 4. They came from cities of Idaho, Washington and Oregon. Papers were read by physicians from Portland, Spokane, Seattle, Colfax and Lewiston.

Meeting of Medical Board. Nine applications for state licenses were received by the medical board at Boise, Oct. 4. Three of these applied for license by reciprocity, while six took the usual board examination.

President of Examining Board. Dr. George F. Ashley, of Montpelier, has been elected president of the medical examining board.

Dr. C. A. Moore, of Paris, has been appointed county physician to fill the vacancy caused by the resignation of Dr. R. G. Sutton.

OBITUARIES

Dr. Constance J. Klecan, of Portland, Ore., died Oct. 9, from a sucidal dose of morphine. This action was supposed to be due to melancholy and depression. She was Pole by birth and obtained her medical education in Vienna. Later she studied in Johns Hopkins University and specialized in pathology and bacteriology. She came to America about ten years ago and located at Portland as assistant to Drs. Matson. Several years ago she entered private practice as pathologist and bacteriologist.

Dr. Hugh M. Gleason, of Butte, Mont., 34 years of age, was drowned in the Willamette River at Harrisburg, Ore., Sept. 27. With a companion he drove down a decline leading to the ferry, supposing the boat was there. As it was dark he failed to notice its absence and plunged into sixteen feet of water. They were on an automobile trip from Butte to Los Angeles.

Dr. D. W. Figgens, formerly of Boise, Ida., died in San Diego, Sept. 19. He formerly practiced in Hailey, locating in Boise in 1901. During the Spanish-American war he was Lt. Col. of the First Idaho Volunteers. After the war he practiced in Alaska. For a time he was in the real esate business in Seattle. Later he was interested in mining in Alaska.

Dr. Samuel H. Starbuck, of Seattle, died Sept. 28, aged 61 years. He had practiced in Seattle for fifteen years.

REPORTS OF SOCIETY MEETINGS

UTAH STATE MEDICAL ASSOCIATION

REPORT OF THE TRANSACTIONS OF THE TWENTY-EIGHTH ANNUAL MEETING OF UTAH STATE MEDICAL ASSOCIATION, SALT LAKE CITY, UTAH, AUG. 31-SEPT. 2, 1922

FIRST SESSION

Held at University Club, 12 o'clock, Aug. 31.

Meeting called to order by the President, A. C. Behle, of Salt Lake; Wm. L. Rich, secretary.

Roll call showed quorum present.

Moved by J. C. Landenberger, seconded by T. C. Gibson and unanimously carried, that, inasmuch as the minutes of the 1921 meeting were printed in full in Northwest Medicine, the reading of them be dispensed with at this meeting in order to save time.

President Behle announced that the first order of business would be reports of the officers and standing committee.

President Behle gave an oral report of his recent trip to California, where he attended the Annual Meeting of the California State Association as a delegate from our Association and a guest of their Association. The important items in his report were:

1. Western States Division of the A.M.A. States west of the Rocky Mountains (Colorado, Nevada, Idaho, Arizona, Montana and the Coast states) should organize. This in line with the movement suggested at the meeting of the Fraternal Delegates at Yosemite.

2. A Journal for our preceedings. The California Journal, being made the big journal of the coast, states abstracts made from it in all sections of the country. Exhibited at the last meeting of the A.M.A. as an ideal state journal. Subscription price $4.00. Dr. Musgrave, the editor, offered to let us join with them on an exact cost basis—this year $2 30. Nevada is making it their journal and they have made Nevada a price of $2.00 for the first year and would make us this same figure, but after that the price would have to be on an exact cost basis.

3. Legal Department. California Society has a strong organization. Met with Mr. Perth the full time attorney who said they had all and more than they could handle, so had no room for the other states at present. If a Western Division of the A.M.A. were established, a Legal Department could be worked out for the whole division.

4. Public Health Department of the California State Society, whereby all the doctors, dentists, social workers, schools, nurses, pharmacists, board of health, etc., are all associated together for the betterment of the general health. This is the big fighting arm of the California State Medical Society. They publish a Better Health magazine, have an editorial writer who is a full time man. The doctors do not appear prominent-

ly in this organization but they control it. They also publish a page of questions and answers in the Los Angeles and San Francisco papers, and a responsible person answers the questions, not just anybody. Public education is what we are after and all these forces working together in one big definite organization would help accomplish something.

5. We should adopt the same plan that is used in the election of the president of the A.M.A. Elect him a year ahead of the time he goes into office.

6. The Council. The Council are our representatives when we are not in session. The oldest thinkers in the profession are the men for this work, not politicians who can control certain things but men who can act. (Cache Valley problem referred to).

Report of the Secretary

Since our last annual meeting a good deal has been said about proper education of the public, and the medical profession has come in for its share of the blame for the presence of cults and quackery, etc. It has been pointed out that our profession has been too ethical and has withheld from the public many scientific facts. One authority goes as far as to state that the public is at least twenty-five years behind the medical profession in proper education and appreciation of the science of medicine as it exists today. The day has long since past when our profession can hope to have and to keep the confidence of the people without this fault being recognized and some remedy applied.

This subject among others was brought up at the meeting of the secretaries of the component state associations held at the Chicago headquarters of the American Medical Association last November. The advisability of a national lay journal was discussed, also the editing of a department of medicine in the columns of the lay press. Many states now have a lay publication, the most notable of which is in the state of California. This journal is published by the League for the Conservation of Public Health, under the direction of the secretary of the California State Medical Association, but is purely a lay journal.

Our President, Dr. Behle, attended the last meeting of the California State Medical Association, as an invited guest and as a delegate from our association, and has investigated the workings of the league, medical defense, and other vital questions as you will note in his report.

At the Secretaries Convention, in Chicago, the advisability of a National Bureau of Public Policy and Legislation was brought up. It was urged that this bureau hire, at a liberal salary, some of the very best attorneys in our country to be in charge of the legislative department, the functions of which were to be national, as well as available to each component state association in their problems of social legislation. The same group of attorneys might also conduct a National Medical Defense, insurance against malpractice, and in fact be our medical and legal advisors and defenders. Connected with this bureau a Speaker's Bureau might furnish a yearly program to each state association. This would enable each state association to choose such speakers and topics as would be most fitted to their peculiar problems. The bureau could aid each state association in a regular course of study and postgraduate work each year, being peculiarly fitted to give us the things most desired in this line.

It was found that neither of our duly elected deelgates could attend the American Medical Association session in St. Louis. So the duly elected delegates chivalrously handed in their resignations and asked that other delegates be appointed who could attend this year's session of the National House of Delegates. The officers and council chose a delegate and alternate and we shall have a report from the attending delegates.

One new county society has been organized this year, namely, Carbon County, with headquarters at Price. A circular letter and a return postal card weer sent to each physician in Carbon County in an effort to find out the attitude of the doctors in that locality. There was a generous response in favor of organizing the county. The charter was duly signed and given to the chairman of the council, Dr. E. G. Hughes, who is also councillor for the third district. Dr. Hughes met with the physicians in that locality and organized the society since our last meeting in July. There were fifteen charter members, all of whom have paid their dues and are in good standing.

The other component societies are the same as last year. The following table sets forth the membership and comparisons with 1921:

Cache Valley	20	same as last year	
Carbon County	15	an increase of	15
Salt Lake County	200	an increase of	3
Uintah County	6	a decrease of	8
Utah County	36	a decrease of	1
Weber County	39	a decrease of	11

Total membership 316, and a total decrease over last year of 2 members.

The postgraduate course given by Dr. Brooks was a huge success, in spite of the fact that the chairman of the postgraduate committee was absent. Dr. Brooks has done a tremendous amount of work in giving this course and absolutely refuses to accept any fee whatsoever for his excellent service. Dr. Brooks insists that the fee be given to the State Association as a nucleus for building up a future fund for postgraduate work. It is fitting that the House of Delegates and the Secretary recommend that some suitable recognition be made to Dr. Brooks for his service to the association. Thru his efforts a sum in excess of $500 has been contributed to this association.

Before this body meets again the legislature will convene. It is known that there is a large sum of money available to influence legislation in favor of the cults. Our present law has some flaws and has not been enforced because of these imperfections. The Committee on Public Policy and Legislation has rewritten those portions of the bill with the aid of the Department of Registration and hope to make it airtight this time, providing these amendments and corrections can be successfully placed in the statute books. This means a lot of work and requires the cooperation of every individual member, also attorneys fees and some financial backing. The secretary recommends that the present committee who has fought our battles in the two legislatures be reappointed, with as few changes as are necessary, due to the reelection of officers.

We are indeed fortunate to have with us Dr. Wm. T. Williamson, of Portland, one of the trustees of the American Medical Association. Dr. Williamson has a reputation of being one of the progressive kind of trustees. He is a man of high ideals, unusual ability and a most fascinating speaker.

The following officers are to be elected: President and president-elect, three vice-presidents, treasurer, councillor for the third district, delegate to the A.M.A., two-year term, alternate to the A.M.A., two-year term.

All of which is respectfully submitted.

Wm. L. Rich.
Secretary.

Report of the Treasurer

RECEIPTS

Sept. 7, 1921, balance in bank			$ 370.52
From the different societies between Sept. 30, 1921, and Aug. 24, 1922, as follows:			
Cache Valley M. S.	$ 76.00		
Carbon County M. S.	60.00		
Salt Lake Co. M.S.	712.40		
Uintah County M. S.	24.00		
Utah County M. S.	135.00		
Weber County M.S.	171.00		
Total from county societies		1,178.40	
Aug. 24, 1922 Coupons from Liberty Bonds		12.75	1,191.15
Total Receipts			$1,561.67

DISBURSEMENTS

(Bet. Sept. 1, 1921, and Aug. 30, 1922)

Hotel expenses of guests in connection with 1921 meeting and entertainment		$ 163.80	
Moving picture machine, operator and supplies for 1921 meeting		29.45	
Western Union—			
Sept. 1921	$ 2.31		
May 1922	34.56	36.87	
F. L. Peterson—salary, postage, etc.		27.50	
Wm. L. Rich—salary & expenses		185.75	
Renewal of Bond		2.50	
S L. Transfer Co.)— (Hotel Utah to C. C.)		1.00	
Stenographic work—report of 1921 meeting, multigraphing, postage, etc		170.33	
Stationery and printing, etc.		132.45	
Jos. F. Worthen, acting registrar special meeting		4.00	
Entertainment of guests, hotel bills, etc., at special meeting		107.16	
Flowers for funeral of Dr. Geo. E. Hyde		15.00	
Subscrpitions to Northwest Medicine		285.00	
Total disbursements			$1,160.81
Balance on hand Aug. 30, 1922			$ 400.86

ASSETS

Cash on hand	$ 400.86
Three $100 bonds of the second Liberty Loan 4¼ gold bonds of 1927-42 with coupons attached from 11|15|22 to 11|15|42	300.00
Money collected for the Society from the special course given by Dr. Harlow Brooks	650.00
Total assets	$1,350.86

F. L. Peterson,
Treasurer.

Report to the Council

To Members of the House of Delegates,
Utah State Medical Association:
Gentlemen:

The Chairman of the Council has the following report to make since your last meeting of a year ago. During the last year the Council has held a number of meetings in Salt Lake City and Logan to consider an appeal by Drs. X and Y from the Cache Valley Medical Society's action in denying them membership in that society. The greater part of our meetings concerned the appeal of Dr. X, Dr. Y's application not being acted on by the C.V.M.S. until last July at a special meeting of the C.V.M.S. ordered by the Council, notwithstanding the fact that his application was presented to the C.V.M.S. in December of 1921. The reason offered the Council why Dr. Y's application was held up was that the Society (C.V.M.S.) was waiting to see what action the Council took on Dr. X's case. Dr. Y's credentials were reported by the Censor Committee of the C.V.M.S. as being O.K. and no charges filed against him to justify the delayed action.

It appears from very conclusive evidence that the policy toward members of the profession locating in Cache Valley, who apply for membership in the local Medical Society, is to deny action on their applications for a period of several months and heretofore for some years and they are placed, as it were, on a state of probation. In the meantime they are checked up and are considered either for or against and, if found against when final action comes, they are denied membership in the society. Dr. X was permitted to practice medicine in the state of Utah thru reciprocity and made application to the C.V.M.S.

with credentials of membership in his previous local and state societies. Had these facts been presented to the Council in the first place, Dr. X would be a member of the C.V.M.S. in accordance with Article X of our Constitution.

I would suggest that in the future all such matters be referred to the State Association by all component societies. It appears that there are two factions in the C.V.M.S. and that the greater faction has been against Drs. X and Y from the start and this includes the Councillor from the First District. This has complicated matters with the Council in endeavoring to act on Dr. X's case without prejudice. I would suggest that in the future, provision should be made whereby, when men, holding important positions in our State Association are known to be prejudiced and are connected with any faction known to be against the best interests of a local society, the President of the State Association and the other two members of the Council be empowered to appoint a disinterested man to sit on the case in question.

The Cache Valley Medical Society does not even accept with good grace the action of the State Council which is supposed to be final on certain matters, as is evidenced by certain clippings sent to members of the Council with the statement, "This is the man you forced upon us," etc. The case of Dr. X has stirred up considerable talk both in and out of medical circles in Logan and thruout Cache Valley to the extent that the Council has been presented with numerous petitions and letters from individuals from almost every walk in life, from a doctor on one end to an undertaker on the other, and all activities found between the cradle and the grave, including bankers, lawyers, bishops and their counselors, etc., all speaking in complimentary terms of Dr. X and yet to no avail. The Council has, besides this, many statements (verbal) from doctors of Dr. X's unethical conduct, based usually upon hearsay and prompted more or less by personal prejudice.

When it came to a question of ethics the faction against Dr. X as well as the faction for him, had differences of a very definite meaning which presented much need for harmony and cooperation among members of the Cache Valley Medical Society. Personally I feel that the Utah State Medical Association has a very definite duty of more or less difficult nature to perform in Cache Valley, if the profession as a whole is to be benefited and the public confidence strengthened in scientific medicine in this particular locality.

It does not bespeak the noblest ideals for men engaged in the art of healing to be continually at each other's throats and expect an on-looking public to condone such with respect. Something must be done, gentlemen, in the Cache Valley Medical Society in order that men must be taught to live and let live. It is high time that we make provision to curb the domineering tendency of one faction against the other, in order that the society may function properly in bettering the scientific, moral and material condition of every physician. It is high time that the Council should exercise a staying hand against such factions who would crush certain men of the profession by heaping injustice upon them. Some ot us need a kinder heart and more of Christ in our souls, if we expect to harmonize the profession as a whole and be prepared to do the work the public will demand of us. Ever since I became a member of the Council, and to my certain knowledge for years previous, there has been turmoil and strife in Cache Valley among the profession. Something is wrong and it will be up to you gentlemen, if this thing is not righted within a reasonable time, to revoke the charter of the Cache Valley Medical Society. The Utah State Medical Association should stand for what is right and condone wrong in no man. The irregularities practiced by the Cache Valley Medical Society should not be winked at in the future. This membership should be stood on their feet and be given to understand that the spirit and intent of our Constitution and By-laws shall be held inviolate, so that men who dare face the struggle in Cache Valley will be given simple justice.

This report thus far has concerned the First District, which members of the Council are familiar with. There are no troubles in the Second or Third Districts. On June 24, 1922, the Carbon County Medical Society was organized in the Third District.

Yours respectfully submitted,

E. G. Hughes,
Chairman of the Council.

Report of the Delegate to A.M.A.

Delegate's Report of the American Medical Association Meeting held at St. Louis, Mo., May 22 to 26, 1922.

The St. Louis meeting was pronounced by those capable of judging such an event to be the best session ever held by the Association.

The registration, 5,174, has only been exceeded three times, twice at the sessions held in Chicago and at the meeting last year at Boston. Both of these are centers of much denser population than St. Louis. Only seven physicians from our state were registered at this meeting.

Great credit is due the Local Committee on Arrangements for the splendid work, cooperation, and systematic way everything was executed. Nothing which was for the pleasure and entertainment of the visitors was overlooked or forgotten. Even the doctors' wives and their sweethearts formed an apparently very jolly and harmonious entertainment committee.

The Scientific Work was unusually good and many of the halls carried the "Standing Room Only" sign during the presentation of papers. Some of the sections combined in a symposium on subjects of common interest. A splendid motion picture theater formed a part of the Scientific Exhibit. This was well attended. The exhibitors in the Commercial Department were very numerous and seem to have made a special effort to present the scientific side of their wares and demonstrate their application to medical science.

The House of Delegates was called to order Monday at ten o'clock by vice-speaker Dr. F. C. Warnshuis, of Grand Rapids, Mich., the Speaker-elect, Dr. Dwight H. Murray having died last October at his home in Syracuse, N.Y.

The Speaker asked President Work to take the chair while he delivered a very forceful address on the following subjects:

1. Eulogy of the late Speaker, Mr. Murray.
2. Education of the public regarding scientific medicine.
3. Health insurance, group medicine.
4. The trained nurse and the nursing problems.
5. Semiannual meeting of the House of Delegates.
6. Political activity.
7. The Speaker concluded by the naming of the Reference Committee.

President Work now addressed the House of Delegates, laying special emphasis on "State Medicine." He also suggested dividing the country into sections for the purpose of holding mid-year meetings.

President-elect Dr. deSchweinitz reviewed our Medical School and Education, and made some very good suggestions.

Our Secretary ,Dr. A. R. Craig of Chicago, gave his report. On May 1, 1922, the Association had 89,048 members. The A.M.A. Directory gave the names of 496 physicians in Utah, with only 335 named as members of the State Association. This is an increase of 39 over the previous year.

The Board of Trustees gave a very voluminous and interesting report. Since we have one of their members with us we will only make mention of two items:

1. The income from the advertising in the Journal exceeds the receipts from dues and subscriptions by $117,367.00. The total income from the publishing of the Journal and from dues passed the million dollar mark.
2. The matter of dues and subscription price of the Journal was placed in the hands of the Trustees with a minimum price of $5.00 and a maximum price of $6.00.

The report contained many other interesting things which we hope to have discussed by our distinguished guest.

The House of Delegates did an immense amount of work and many important problems were discussed and finally passed upon. Briefly a few of them were:

1. A resolution was passed asking that the Volstead Act be so amended that the Government would furnish the druggist with sealed bottles in bond from the Government distilleries so that the physician, desiring to prescribe whiskey would be able to get pure goods.

2. The House of Delegates referred the question of a Legislative Bureau to the Trustees. Such a bureau has been formed with a full-time paid secretary; Dr. Wm. C. Woodward has been appointed to this position. This bureau is to have charge of the National Legislative interests and to cooperate with the Legislative Committee of each state.

3. The subject of "State Medicine" came before the House of Delegates in the form of a resolution. The House went on record as opposed to all forms of State Medicine, and defined what was understood by the term as follows: "State Medicine" is hereby defined to be any form of medical treatment provided, conducted, controlled, or subsidized by the Federal or State Government or Municipality, excepting such service as is provided by the Army, Navy, or Public Health Service and that which is necessary for the control of communicable diseases, the treatment of mental disease, the treatment of the indigent sick, and such other services as may be approved by and administered under the direction of or by a Local County Medical Society and are not disproved by the State Society of which it is a component part.

4. A resolution was passed by the House of Delegates urging the Trustees to take immediate steps to develop an efficient plan of lay publicity. This may take the form of a lay Public Health Journal, forming a connecting link between the profession and the public, dealing with preventable medicine, hygiene, sanitation and communicable diseases; in brief, to enlighten the public as to what Scientific Medicine is doing, also its efforts to protect the public against quacks, charlatans and ill advised medical laws.

5. Another resolution was passed dealing with medical ethics and is especially designed to cover the ethics of Group Medicine. The exact wording of the resolution follows:

To cover group medicine, Article 1, chapter 2, Section 4, of the Principle of Medical Ethics, was amended to read as follows:

Solicitation of patients by physicians as individuals, or collectively in groups by whatsoever name these be called, or by institutions or organizations, whether by circulars or advertisements, or by personal communications, is unprofessional. That does not prohibit ethical institutions from a legitimate advertisement of location, physical surroundings and special class, if any, of patients accommodated. It is equally unprofessional to secure patients by indirection thru solicitors or agents of any kind, or by indirect advertisement, or by furnishing or inspiring newspaper or magazine comments concerning cases in which the physician has been or is concerned. All other like sleflaudations defy the traditions and lower the tone of any profession, and so are intolerable. The most worthy and efective advertisement possible, even for a young physician, and especially with his brother physicians, is the establishment of a well-merited reputation for profesional ability and fidelity. This cannot be forced, but must be the outcome of character and conduct. The publication or circulation of ordinary simple business cards, being a matter of personal taste or local custom, and sometimes of convenience, is not per se improper. As implied, it is unprofessional to disregard local customs and offend recognized ideals in publishing or circulating such cards.

It is unprofessional to promote radical cures; to boast of cures and secret methods of treatment or remedies; to exhibit certificates of skill or of success in the treatment of diseases; or to employ any methods to gain the attention of the public for the purpose of obtaining patients.

6. Another resolution protesting against ex-

service men being given vocational training in chiropractic schools was passed without a dissenting voice. It was stated 368 men were receiving such training at this time.

7. An Act to Disassociate the American Red Cross and its Public Health activities was passed.

8. The Shepherd-Towner Maternity Act was declared to be a type of undesirable legislation which should be discouraged. However, within the last few days this Act has been declared unconstitutional by the U.S. Attorney General.

9. A resolution asked the Trustees to report at the next meeting a concrete plan for the protection of the members against malpractice suits.

Several other resolutions of more or less importance were passed, one asking the Association to conduct a survey of pay clinics and group practice, so that principles and policies best designed to protect the general practitioner and the public may be devised.

All told the meeting was an unusually lively one, better than our state political conventions. The general feeling among the delegates seemed to be a determination to resist further encroachments upon the rights and privileges of the legitimate practitioners of medicine, whether by legislative action of State or National Governments, or whether the encroachments come from the State Medicine or Soviet government advocates within the profession of which we all know theer are a goodly number.

The meeting ended by electing Dr. Ray Lyman Wilbur, of San Francisco, as President. The Trustees announced the next meeting would be held in San Francisco, the last week of June, 1923.

Respectfully submitted,

E. M. Neher,
Delegate.

Report of the Committee on Education and Postgraduate Work

Dr. H. J. Sears, chairman, made an oral report of the work of his committee. Stated they had worked in conjunction with the Scientific Committee and the program for the special meeting in June had ben arranged, and a very fine session held. That they had secured Dr. Harlow Brooks to give a postgraduate course, the first one under the supervision of this committee. That the financial report would show between $500 and $600 for the Association as Dr. Brooks had declined to accept any of this sum. Dr. Sears suggested that the Utah State Medical Association thank Dr. Brooks in some suitable way for this magnificent gift.

Report of the Committee on Public Policy and Legislation

The Medical Practice Act which was passed by our Legislature in 1921 has now experienced a fairly thoro practical application and has been found deficient on four different points, to-wit:

1. The constitutionality of the paragraphs pertaining to the minimum standards of professional education. (a) for the practice of medicine and surgery in all their branches; (b) for the practice of any system or method of treating human ailments without the use of drugs or medicines and without operative surgery, both prior and subsequent to 1926.

2. The omission of any standard of professional education for the Practice of Medicine and Surgery in all their branches between the dates of the passage of the new law in 1921 and July 1926.

3. The fact that a certain phase which is used in several paragraphs for the purpose of specifying a minimum length of time of school attendance and study allows a different legal construction than was originally intended.

4. The method, as prescribed, for the enforcement of the law.

The Directory of the Department of Registration thoroly appreciates the inadequacy of the enforcement clause of the present law and has wisely refrained from prosecuting any and all offenders. As a matter of fact, some of the cults have personally invited him to prosecute them with the assumption that they could not lose and that it would serve to further advertise them.

The Director of the Department of Registration and also the State Administration are considerably perturbed over the failure of the Medical Practice Act, as it reflects no credit to them. They are, therefore, ready and willing to lend all possible aid and support in carrying thru the necessary amendments at the next legislature. The Director, thru practical experience with the law, knows better than any one just wherein it fails and has made many important suggestions for the future. These suggestions are now being studied by the original drafter of the bill, after which we recommend criticism and approval by another attorney.

This Committee calls attention of the State Association to the absolute necessity of amending the present law and to the fact that it will require the fullest effort of every individual member to carry the amendments thru the legislature.

The Association must also appreciate that legislative matters cannot be handled without finances. There is one particular cult that has a national organization, into which flows regular monthly dues for the establishment of a large fund which may be used for the purpose of protecting their members in any locality at any time. This means nothing more nor less than that we are obliged to fight the influence of this very fund during the coming legislature, for it is certainly plain that they will use all the power at their command to defeat our purpose and gain their own.

We cannot afford defeat but we can afford any amount of money necessary to carry the amendments thru, as well as to block any opposed legislation, and your committee advises that the Association, at this time, make financial arrangement for the coming legislative needs. An attorney must be employed to criticize the drafting of the amendments and it will be necessary to engage the services of one or two lobbyists.

Two years ago some of the expenses had to be temporarily carried by peronsal check and the situation was somewhat embarrassing.

Accurate legislative expenses cannot be prophesied, as important occasions may arise very suddenly which demand expenditure and there may be no opportunity of having such account approved by the Council as the majority are out of town members, or, as happened two years ago, there may be no funds in the treasury.

Your committee earnestly recommends a fund of $1,000 to be used as required for legislative purposes this year. This is merely an estimate; it may be more than enough or it may be insufficient.

As time goes on there are many changes taking place which affect the true practice of medicine and surgery. Never before have there been so many cults fostering their services as healers upon the public, and the public, strange as it may seem, are more and more becoming influenced in their behalf. Even the more intelligent are not infrequently caught by the quack.

There are many of the members of this Association who believe that we should absolutely step aside from politics, feeling that its really beneath the dignity of the profession to engage in legislative matters and that such laws as are required by the state to control the general practice of the healing art should be left entirely to the legislature without influence on our part. This, in a sense, would be true, were all the legislators educated students. It happens, however, that legislators, as we have found them, are not students and that they cast their votes for or against a measure depending upon the influence brought against them. We can certainly all appreciate what would happen if the Utah State Medical Association would step out of politics and the influence on the legislator be all one-sided.

The various healing cults are organized; they have financial backing and consequently have influence.

This state of affairs absolutely demands opposition and requires the doctors to actually get deeper and deeper into politics whether we wish it or not. On this principle a mere committee on Public Policy is ridiculously inadequate. We should have a political organization, a Betterment League of some sort which might well include other professions than our own and which should attain a large membership, ostensibly for the purpose of bettering health conditions but in reality to wield the votes. This matter was brought forcibly to the attention of our President during a recent visit to California and we believe the Association would be interested to have the President explain just what he found to exist there in this regard.

J. C. Landenberger,
Chairman.

(To Be Concluded)

BOOK REVIEWS

Edited by Kenelm Winslow, M.D.

The Newer Knowledge of Nutrition. The Use of Food for the Preservation of Vitality and Health. By E. V. McCollum, Ph.D., Sc.D., Professor of Chemical Hygiene and Health of the Johns Hopkins University. Illustrated, Second Edition. Entirely rewritten. Cloth, 449 pp. $3.80. The Macmillan Co., New York. 1922.

Great strides in our knowledge of nutrition have been made in late years. The chemists had formerly pretty thoroly arrived at the supposed nutrients esesntial to growth. Such a proportion of proteids, carbohydrates and fat but, when the attempt was made to feed these in chemically pure state, failure resulted. Then pathology of deficiency diseases aided and the necessity of vitamines became apparent. Next it was found that proteids had very different nutritional value. When digested with acid there were produced aminoacids. Of these eighteen varieties, which normally are split from food proteids in the intestine, some are of much more value than others. Skim milk proteid has three times the value of cereal proteid for building tissue, etc.

The well known diet efficiency diseases are considered, as scurvy, beri-beri and pellagra, due to lack of special substances. The most recently studied is rickets due to deficiency of the substances calcium, phosphorus and organic substance most abundant in cod liver oil. A carnivorous diet supplies them all, while a cereal diet is bad, so that modifying milk with cereal McCollum considers a crime. In arctic regions oil takes the place of light; in the tropics sunlight takes the place of oil, so that in neither region do rickets or poor teeth occur. Sunlight and oil favor nutrition in some unknown manner. For the safety of the race and production of sound teeth the nursing mother must always have plenty of salads and milk, according to McCollum. The three last chapters are of extraordinary interest in respect to the effect of diet on health, longevity, the production of strong, durable teeth, and, finally, on diets of different races and their predominating influence. The book is highly authoritative, wholly instructive and intensely interesting. Winslow.

X-Rays and Radium in the Treatment of Diseases of the Skin. By George Miller MacKee, M.D., Assistant Professor of Dermatology and Syphilogy, College of Physicians and Surgeons, Columbia University, etc. 250 engravings and 22 charts. 602 pp. $9.00. Lea & Febriger, Philadelphia and New York. 1921.

This work is a very comprehensive treatment of the entire subject, covering historical data, together with the physics and description of the apparatus and measuring devices. Very detailed instruction is given as to treatment in general and the latter half of the book is taken up with detailed information regarding the treatment of particular skin diseases. It is well worth study by both the beginner and the more advanced radiotherapist. H. B. Thompson.

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Individual Gymnastics. A Textbook of Corrective and Remedial Gymnastics. By Lillian Curtis Drew, Director of the Department of Corrective Gymnastics, Central Branch, Y. W. C. A., etc. 225 pp. Illustrated with 100 Engravings. $2. Lee & Febiger, Philadelphia and New York. 1922.

It is believed by the author that there exists the need of a book which is clearly and correctly presented to show the cause and treatment of certain physical defects. It is claimed that the substitution of individual gymnastics for the gymnasium group, which are presented in this book, can be used with advantage in the correction of abnormal conditions of most frequent occurence. It calls attention to lines of precedure for prevention and improvement. Among other chapters are those upon the upright posture, anteroposterior faulty postures, the feet and shoes.

The Healthy Child From Two to Seven. A Handbook for Parents, Nurses and Workers for Child Welfare. By Francis Hamilton MacCarthy, M.D., Assistant Professor of Diseases of Children in Boston University. 235 pp., $1.50. The Macmillan Co., New York, 1922.

The numerous books written of late on the growth and development of the child are indicative of the universal interest devoted to childhood. This volume includes sections on child welfare, child nature, training and education and safe guarding the nervous system during the preschool years. The author states that, of the large proportion of young men rejected by army and navy examinating boards for physical and mental unsoundness, more than half the causes were preventable and nearly all these defects had their inception during the years of early childhood. This book discusses important facts during this early formative period of the child's life.

The Sympathetic Nervous System in Disease. By W. Langdon Brown, M.A., M.D. (Cantab.) F.R.C. R. (London). Physician with Charge Out Patients, St. Bartholomew's Hospital, etc. 161 pp., $4.25. Oxford University Press, London and New York.

The author aims to emphasize the main plan of the nervous system and to illustrate its relations to affections of the endocrine glands, digestive circulatory systems and glycosuria. Different chapters are devoted to each of these topics.

Diathermy in Medical and Surgical Practice. By Claude Saberton, M.D., Hon. Radiologist to the Horrogate Infirmary and to the Royal Bath Hospital, Horrogate, etc. 138 pp., $2.25. Paul B. Hoeber, New York.

Diathermy is the high frequency current under another name. The object of this book is to guide students and practitioners who wish to master the technic of diathermy. It is divided into chapters under three parts, technic, medical applications and surgical diathermy.

Hughes' Practice of Medicine. Including a Section on Mental Diseases and on Diseases of the Skin. By R. J. Scott, M.A., B.C.L., M.D. Formerly Attending Physician to Bellevue Dispensary, etc. 12th Edition. 810 pp. 63 illustrations. $4.00. P. Blakiston's Son & Company. Philadelphia. 1922.

The fact that this volume has gone thru twelve editions would indicate a demand for it. Obviously it could not present a thoro digest of the many subjects which it covers. In compact space it presents the essential facts concerning general diseases and the special ones mentioned in the title. Most attention is paid to pathology, diagnosis, symptoms and treatment of each disease discussed. For a handy reference book this will be found useful for any practitioner of medicine.

Radiant Energy and the Ophthalmic Lens. By Frederick Booth. Introduction by Whitfield Bowers, A.B., M. D. Formerly Major M.C., U.S.A. 226 pp. 230 Illustrations, $2.25. P. Blakiston's Son and Co., Philadelphia, 1921.

The author's purpose is to present from a didactic standpoint a study of the principles of optics, also the eye from an optical standpoint—accomodation, convergence, the ophthalmic lens, transposition, etc. Numerous drawings illustrate the text.

Obstetrical Nursing. A Textbook on the Nursing Care of the Expectant Mother, the Woman in Labor, the Young Mother and Her Baby. By Carolyn Conant Van Blarcom, R.N. Formerly Assistant Superintendent and Instructor in Obstetrical Nursing in Johns Hopkins School for Nursing. 558 pp. With 200 Illustrations and Charts. $3. The Macmillan Co., New York, 1922.

This book is much more pretentious than the ordinary work on this subject. The author discusses the underlying principles of obstetrical nursing and surveys the nursing methods in various maternity wards and hospitals. The numerous illustrations add to the importance of the work. This is a valuable book for the obstetrical nurse.

The Surgical Clinics of North America. (Issued serially, one number every other month). Volume 11, Number IV. (Boston Number August, 1922). 270 pp., with 107 illustrations. Per clinic year (February, 1922, to December, 1922). Paper $12.00 net; Cloth $16.00 net. Philadelphia and London: W. B. Saunders Company.

This volume contains instructive papers on important surgical conditions and operations by leading surgeons connected with Boston hospitals. Reporting clinical lectures, they present a personal aspect that helps to bring the reader into close relations with the author and his subject. It is a valuable volume for the practitioner.

An Essay on the Physiology of Mind. By Francis X. Dercum, M.D., Ph.D., Professor of Nervous and Mental Diseases in the Jefferson Medical College, Philadelphia. 12mo of 150 pages. Philadelphia and London. W. B. Saunders Company, 1922. Cloth, $1.75 net.

The writer presents the basic facts which under given conditions manifest the qualities which we speak of as the mind. It is an interpretation based on biological, morphological, physical and chemical considerations. The subject is elaborated along these lines in a fascinating and satisfactory manner.

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ORIGINAL CONTRIBUTIONS

GRADED EXTRAPLEURAL THORACOPLASTY IN CHRONIC PULMONARY SUPPURATION WITH SPECIAL REFERENCE TO DIFFUSE BRONCHIECTASIS.*

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Pulmonary suppuration is an inclusive term for infection with pus formation in the parenchyma of the lung or bronchi. Chronicity, according to common usage, implies a disease of long duration or one which does not progress toward cure. The latter criterion would seem within wide limits the more rational but long duration is direct evidence of the presence of some condition which prevents healing. Excluding pulmonary tuberculosis and other types of infection due to specific organisms, such as actinomycosis and streptotrichiasis, chronic diseases chiefly to be considered are abscess, bronchiectasis and their combinations. Localized gangrene of the lung quickly suppurates and then presents the essential characteristics of abscess. Purulent bronchitis, if persistent, probably always leads to bronchiectasis. Chronic suppurative pneumonitis may present a clinical picture very difficult to differentiate.

Chronic abscess develops from acute abscess. Perforation of an acute abscess into a bronchus may result in sufficiently adequate drainage to make a spontaneous cure. If drainage is imperfect, as is usually the case, the retention of pus is prone to produce ulceration and enlargement of the cavity and often secondary cavitation. Chronic inflammation results in a thick zone of fibrosis, with stiffening of the abscess walls which prevents their collapse. Pleural adhesions also effectively preclude the collapse of the walls of a large cavity. This condition of the walls of chronic abscess has been not inaptly likened to that of chronic empyema cavity. The constant presence of infection in the bronchi draining the cavity produces bronchitis and eventually bronchiectasis. The spasmodic explosive cough sooner or later spreads the infection to other portions of the bronchial tree. Eventually solitary abscesses may develop at some distance from the original abscess or a diffuse bronchiectasis may effectively overshadow the original process.

With the possible exception of congenital bronchiectasis, the condition probably always develops following infection. It may be localized or diffuse. Physical findings and roentgenograms may be entirely inconclusive with regard to both the nature and localization of the process, the diagnosis resting solely on the history and presence of chronic cough and profuse expectoration.

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* Read before the Twenty-eighth Annual Meeting of Utah State Medical Association. Salt Lake City, Utah, Aug. 31-Sept. 2, 1922.

If localized and of the so-called saccular type, it may be impossible to distinguish it from abscess, clinically or anatomically. If diffuse, there is always uncertainty as to the extent of involvement. Lesions occur with pronounced cough and an abundant purulent sputum in which physical signs and roentgenograms fail even to determine the side from which the pus comes. In such cases bronchoscopy is the only method of localization. It may also be the only means of excluding the presence of a foreign body that does not cast a shadow on the roentgenogram.

Usually physical findings and the roentgenogram will make it possible to differentiate typical abscesses and bronchiectasis. There is a group of cases, however, characterized by the presence of cough and abundant purulent sputum, in which the pleura is uniformly and extensively thickened, effectively masking physical signs, and the roentgenogram may show simply a uniform dense shadow. Even tho the history may be characteristic of abscess, accurate localization is impossible and secondary bronchiectasis cannot be excluded. Empyema with a bronchial fistula may be difficult to exclude in such cases. The sputum is usually more frankly purulent in empyema, however, and the onset abrupt, but in case of sieve-like perforation the onset of purulent expectoration is gradual and the pus is mixed with bronchial secretions. In any doubtful case empyema must be excluded by exploratory aspiration.

TREATMENT

The principles involved in the surgical treatment of pulmonary suppuration have been drainage, collapse therapy and extirpation of the diseased tissue. In attempting to evaluate the relative merits of these procedures, theoretic considerations, as in experimental investigations, must give way to the crucial test. The results of any method have not been brilliant. It has been said that the surgical treatment of bronchiectasis is the most thankless task in surgery.

Drainage. As would be expected, drainage in bronchiectasis has yielded not only a high mortality, but a small proportion of cures. In a series of 123 collected cases reported by Sauerbruch, 33 per cent of the patients were cured, 6 per cent improved, 27 per cent not improved, and 25 per cent dead. Batzdorff, in a series of fifty-three collected cases, found 9.4 per cent cures and a 62 per cent mortality. In individual series in which unfavorable cases are more apt to be included, the mortality is even higher. Garre lost 37 per cent of such patients immediately following operation, and Korte had a mortality of 78.6 per cent. Nor is the result of simple drainage in cases of chronic abscess much better. Eisendrath reported a 35 per cent mortality; Sauerbruch, 56.5 per cent cures and 38 per cent mortality. In seventeen chronic cases reported from the Mayo Clinic, the operative mortality was 47 per cent.

Collapse Therapy. Artificial pneumothorax, thoracoplastic rib resection, pneumolysis, and ligation of the pulmonary artery to the affected lobe may be grouped under collapse therapy. Because of the markedly beneficial effect of artificial pneumothorax in pulmonary tuberculosis, it was natural that this method should suggest itself as of promise in the treatment of nontuberculous suppuration of the lung. The results, however, have been disappointing. Small series of cases in which improvement approximated cure have been reported. Frank, Weil, Luxembourg, and Balboni, have reported isolated cases, in which either the patients were greatly improved or cured. Balboni's patient was symptom-free eight months after the last treatment. Unverricht tried the method in five cases. Adhesions prevented collapse of the lung in one; in three the patients were considered cured on examination eight months, ten months, and one year, respectively, after treatment. It should be noted that in these cases the symptoms had been present a relatively short time, from one and one-half to two and one-half years. Volhard reported six cases. In three no considerable collapse was achieved; in one lasting benefit was obtained; and in one, with very complete collapse, the patient seemed completely cured but cough and sputum recurred after two and one-half years. Schmidt reported no beneficial effect in eight cases. Artificial pneumothorax was used in two patients with bronchiectasis at the Mayo Clinic, with marked but temporary benefit; one patient remained almost symptom-free for five months, the other for more than a year. The chief limitations of the method seem to be that in most cases adhesions, or the condition of the lung itself, prevent sufficient collapse; in cases in which marked collapse is obtained, prolonged treatment is necessary. Improvement, moreover, does not seem to be permanent.

Thoracoplasty. The rationale of extensive rib resection for the purpose of collapsing the lung in case of large pulmonary cavitation was first pointed out by Quincke, in 1888. He insisted that inflammatory thickening of the walls of the abscess and adhesions to the parietal pleura prevented the collapse and healing of the cavity. Spengler, two years later, independently advocated the same principle. He observed that cicatricial contraction of the healing tuberculous lung manifests itself by the retraction of the surrounding structures, that is, the heart, mediastinum and diaphragm, towards the affected side. The effect of cicatricial contraction on the conformity of the chest wall is often observed to result in deepening of the supraclavicular and infraclavicular fossae, marked structural changes in the ribs, and even scoliosis of the vertebral column. Spengler reasoned that plastic rib resection in such cases would promote cicatricial contraction and healing. In 1896, Quincke again urged thoracoplasty on the grounds that collapsing the lung and so putting it at rest would lessen blood and lymph circulation, and would thereby tend to arrest the process of cavity formation.

In spite of these suggestive observations and some measure of success obtained by Turban and by Landerer in a few cases, the method was not given serious consideration nor really put to the test. It was only after the adoption of artificial pneumothorax in the treatment of pulmonary tuberculosis that thoracoplasty was again considered in tuberculous cases, in which adhesions prevented artificial pneumothorax. Brauer pointed out that failure to obtain a larger measure of success in the earlier cases was due to failure to carry out the requirements of a sound principle. Friedrich was the first to put the method to a real test by performing a sufficiently extensive operation to obtain complete mobilization of the chest wall over the diseased lung. His operation, involving resection of the entire length of the first ten ribs in one stage, is a very formidable procedure, however, and a high mortality is to be expected, even in patients who are fairly good surgical risks. By dividing the operation into stages, Wilms lowered the operative risk and thereby extended the indications for thoracoplasty.

On the continent thoracoplasty has been used in large series of cases of unilateral tuberculosis with gratifying results. In 1921, Sauerbruch, reported 294 cases of pulmonary tuberculosis, in which operation was performed chiefly by his own method and by the method of Brauer and Friedrich. In these cases thoracoplasty resulted in about 60 per cent improvement or cure. In this country the method has not as yet been generally adopted, but is growing in favor.

The analogy between certain forms of nontuberculous suppurative cavities and cavities of tuberculous origin secondarily infected with the same type of pyogenic organisms seems striking. On a priori grounds it would seem that, if healing of secondarily infected tuberculous cavities can be furthered by collapsing their walls, healing of nontuberculous cavities by the same method should be more certain.

Opinions expressed in the literature as to results of thoracoplasty for nontuberculous pulmonary suppuration have varied greatly. Brauer is quoted to the effect that he has neither observed nor seen reported in literature a genuine case of pulmonary suppuration or bronchiectasis really healed by collapse therapy. Hansen tried the method in two cases without benefit. DeQuervain performed a lobectomy in one case following thoracoplasty. Mumford and Robinson lost two patients and almost lost a third following this operation.

Many cases of marked improvement and some cures have also been reported. Lenharz reported two cases of extensive resection; one patient was cured, the other improved. Kuttner had one patient so treated, whose symptoms had not recurred seven months after operation. Luxembourg reported a cure following Friedrich's operation, combined with apical pleurolysis and resection of the clavicle. Three of Lilienthal's patients improved and one died. Davies performed a Wilm's operation in one case. The patient's condition improved greatly; cough and sputum diminished and the sputum was no longer offensive. Zinn and Muhsam reported a case, in which decided improvement followed operation. Korte carried out extensive rib resections in three cases. One patient died of brain abscess; in a second the results were uncertain, and the third was completely cured. Blake obtained "excellent" results in one case but an "unfortunate" outcome in another. Sauerbruch reported twenty-seven cases. Five patients were permanently benefited; the others obtained only temporary improvement, one died, and one became worse after a year. In eleven patients with postpneumonia complications there was enduring benefit characterized by diminution in sputum, disappearance of putrid stench and improvement in general condition.

Pneumonectomy. From the standpoint of the specific pathologic condition, pneumonectomy seems the operation of choice in chronic pulmonary suppuration, but the operative mortality in such cases has been high. Willy Meyer, in 1914, wrote that previous to that time there had been sixteen lobectomies for bronchiectasis with eight deaths. Since 1914 Robinson has performed lobectomies in seven cases, six from the Mayo Clinic, with three operative deaths. Graham recently reported three cases with one death; Lilienthal has operated on twenty-four patients with thirteen deaths. Hitzrot had one operative recovery. Hansen had four cases with one death. Sauerbruch performed a single stage operation on three patients, all of whom died. Of the six cases, in which he performed lobectomy following preliminary thoracoplasty and ligation of the pulmonary artery, all the patients survived. This makes a total of sixty-four patients with twenty-nine deaths, a mortality of more than 45 per cent.

The results obtained in cases of pulmonary suppuration seem to indicate that there is no ideal treatment. Lobectomy has been so considered but it is open to question whether an operation, that yields a mortality of about 45 per cent can be called ideal, even tho it may seem so to the surgeon whose attention is fixed on the pathologic condition. A disease practically certainly fatal, such as carcinoma, seems to justify almost any operation that offers a chance of cure, but even in this condition most surgeons are reluctant to adopt an operative treatment that would carry so high a mortality. On the other hand, pulmonary suppuration, especially bronchiectasis, is not necessarily incompatible with years of life and some degree of usefulness. The indications for lobectomy, moreover, in the estimate of its most enthusiastic advocates, have been limited to young adults in good general condition and without damage to other vital organs. This leaves a majority of patients for whom other operative measures must be adopted, if they are not to be left to their fates.

Of the other methods of treatment, thoracoplasty would seem to offer the most hope. The imperfect results are probably due in part to a failure to perform a sufficiently extensive operation to secure complete collapse. If so extensive an operation is performed at one time, the operative mortality may be expected to be high, due to shock, embarrassed respiration and retained secretions. A graded thoracoplasty may be divided into a number of stages, thus minimizing the shock and allowing the patient to adapt himself by degrees to the disturbance to respiration and circulation. Very extensive resection can be eventually accomplished and the indication for operation can be extended by making it less hazardous. Experience has shown that certain patients thus treated will be improved so much that an approximate cure is obtained and the hazards of the more radical operation are avoided. If the results are unsatisfactory, lobectomy can be performed, probably with the minimum of operative hazard. Sauerbruch has performed lobectomy on six patients following pulmonary plastic operation (with ligation of the pulmonary artery) without a death, the best record thus far achieved.

During the past two years, I have effected extensive collapse of the chest wall in twelve patients with chronic pulmonary suppuration. Six had typical bronchiectasis. Among these six the characteristic productive cough had lasted two years in two, four years in one, eight and nine years in each of two, and more than twenty years in one. The probable etiology was pneumonia in three, complicated by empyema in one. The onset of symptoms followed appendectomy in one case and tonsillectomy in another. The etiology was indeterminate in one case. Possibly the condition was congenital; the patient stated that he had coughed up large quantities of sputum since his earliest recollection, that is for more than twenty years. From the standpoint of etiology the patient with complications developing after tonsillectomy would naturally be classed as having chronic abscess rather than bronchiectasis. The duration, four years, the absence of fever and leukocytosis, the fair general health, and especially the roentgenogram pointed to bronchiectasis. The roentgenogram did not show the shadow of a surrounding pneumonitis so characteristic of abscess.

The sputum averaged from 240 to 1000 c.c. each twenty-four hours, and was at times excessively foul in four patients. Neither tuberculosis bacilli nor elastic fibers were found. There was moderate loss in weight in only two cases; in all the fingers were clubbed. There was leukocytosis of from 11,000 to 18,000 in three cases. (Roentgenographic findings were typical of bronchiectasis in all except two, in which abscess was considered as a possibility.)

Chronic abscess was diagnosed in five cases and found at necropsy in one other. The duration of symptoms in the six cases was respectively three months, one year, two years in two, four years, and more than five years. In three of the cases the symptoms followed an acute illness, probably pneumonia. In two cases the onset definitely followed tonsillectomy under general anesthesia. In one no etiologic factor could be determined. The sputum varied in amount from 240 to 500 c. c. In no instance were tuberculosis bacilli found in the sputum, and elastic tissue was found in one case only. In contradistinction to the cases of bronchiestasis, there was a secondary anemia, the hemoglobin readings being from 55 to 67 per cent in all these cases; leukocytosis ranged from 12,000 to 25,000. Roentgenograms were typical of pulmonary abscess in three cases. In two there was so much pleural thickening that neither the nature nor the location of the lesion could be determined, the roentgenograms showing a more or less uniform shadow thruout. One of these two patients developed symptoms following tonsillectomy five years before, the other following pneumonia four years before. In the latter case negative exploratory aspiration was performed for empyema.

TECHNIC OF OPERATION

Previous to operation the patient is instructed to empty the secretion from his bronchial tract as thoroly as possible by assuming an inverted position across the bed with his head near the floor. At intervals of half an hour, beginning two hours before operation, he is given subcutaneously 1-8 grain of morphin sulphate in 2 c. c. of a 25 per cent magnesium sulphate solution. The operation is performed under combined regional and nitrous oxid and oxygen anesthesia, enough nitrous oxid and oxygen being used to produce a condition which Crile terms analgesia. In my experience such combined anesthesia has been uniformly effective and satisfactory. The matter of anesthesia is of special importance in graded operations of this kind. A painful first operation will undermine the patient's morale for succeeding ones.

A posterior resection is performed thru a straight paravertebral incision, in two or three stages. The upper ribs are the least accessible on account of the heavy muscles, but it is quite feasible to resect all the ribs, including the first, by this approach without any risk to the large blood vessels which lie anteriorly. The ribs are resected subperiosteally, segments 6 to 12 cm. long being removed according to the exposure desired. After resection, the nerve trunks are each injected with a few drops of absolute alcohol. This reduces and often entirely prevents postoperative pain. The sternal ends of the ribs and lower cartilages are resected next. This may be accomplished in one or two stages. Local anesthesia for the removal of the distal and medial segments is much simplified by the earlier alcohol injection, the anesthetic effect of which persists for some time. The upper medial segments are the most inaccessible in the portion lying under the scapula. These segments may be removed in two stages. First, the lower segments are removed thru a straight intercostal or a T incision, and later the upper segments thru a tongue-shaped incision, encircling the lower angle of the scapula. At the end of each operation the wound is closed in layers, care being exercised to approximate the cut edges of the successive muscle layers. Usually a drain is inserted, and removed in twenty-four to forty-eight hours.

Following operation, the patient is assisted to assume a head-down position across the bed several times a day in order thoroly to evacuate secretions. There is usually very little pain incident to this procedure. The patient sits up as early as he feels disposed, often the second or third day.

COMPLICATIONS

Among the six patients operated on for bronchiectasis there were no serious postoperative complications and no deaths. There was a notable absence of symptoms suggesting shock or later circulatory or respiratory disturbance. The first three patients operated on were not given a prophylactic nerve trunk injection, and they had decidedly more postoperative pain than those whose intercostal nerve trunks had been injected with alcohol. There was no difficulty, whatsoever, to obtain the patients' consent to the later stages of the graded operation under local anesthesia; this is attributed largely to the relative freedom from pain. During resection anteriorly the pleura was torn in one case sufficiently to produce partial pneumothorax but without any effusion or other complication. One patient developed pleurisy with effusion and an infected hematoma under the skin-muscle flap. There was marked dyspnea and some cyanosis until after aspiration of the effusion and drainage of the hematoma. The pleural effusion was sterile and did not recur. Two patients had temporary difficulty and raised the usual amount of pus. One of these patients developed symptoms of bronchopneumonia, but his condition was at no time alarming. A transient rise of temperature followed temporary difficulty in raising sputum in several other instances. The head down position over the edge of the bed several times a day seemed of definite assistance in promoting complete evacuation of the secretions.

Among the six patients operated on for chronic abscess there was the same relative freedom from symptoms suggestive of shock and postoperative pain. Only one patient developed a moderate dyspnea soon after the first operation. The pleural cavity was not opened in any case. One patient developed localized cellulitis which cleared up promptly following drainage.

RESULTS

All of the patients with bronchiectasis made good postoperative recoveries and all showed remarkable immediate improvement, except one who, however, reported marked improvement some weeks after returning home. The first patient, who was operated on two years ago, had the least extensive operation, and is at times almost symptom-free, but has exacerbations of cough and sputum. The second patient had had symptoms for twenty years with sputum averaging from 500 to 1000 c.c. in twenty-four hours; operation was performed eighteen months ago and he is now raising only 30 to 60 c.c. in twenty-four hours, and his general condition is very greatly improved. The third patient has been practically symptom-free eight months, and has gained fifteen pounds in weight. The other cases are too recent to warrant a statement of final results.

Of the patients with chronic abscess three died. One of these was a man forty-six years of age, with a posttonsillectomy abscess of two years' duration. He did well until after the third stage operation, when he developed symptoms of septic absorption and died rather suddenly of a terminal bronchopneumonia and pleuritis on the right side. The left upper lobe showed multiple abscess cavities with associated bronchiectasis. There was marked amyloidosis of the liver, spleen and kidneys. The second patient was a girl of twenty-three with a postpneumonic central abscess of two years' duration; she did well until following the fourth stage operation, except that at times she had moderate hemoptysis. Necropsy revealed a multilocular abscess cavity with associated bronchiectasis, empyema, and multiple abscess cavities of the opposite lung. The third case was diagnosed probably bronchiectasis, with a question of abscess. Necropsy showed a primary abscess in the lower lobe not shown in the roentgenogram or by physical examination, with secondary bronchiectasis.

A fourth patient was dismissed after the completion of the second stage at his urgent request and was to return for completion of operation. His general condition was quite satisfactory at the time of dismissal. He died at home some weeks later and necropsy was not performed.

Two patients showed very remarkable immediate improvement. One is raising from 30 to 60 c.c of sputum in twenty-four hours as compared with 250 or 300 c.c. before operation. Another patient went home symptom-free after having raised from 250 to 500 c.c. of sputum each twenty-four hours for five years, often so foul that she had been forced to give up teaching school and lived more or less as a recluse. She has had exacerbations of cough with from 30 to 60 c.c. of sputum, but she has gained 20 pounds in weight and her general condition has remained very good.

DISCUSSION

A critical review of the cases outlined lends emphasis to the statement that the distinction between chronic abscess and bronchiectasis may be difficult and in some instances impossible. In two patients in this series the roentgen-ray findings and the physical signs gave no sure evidence either of the nature or location of the inflammatory process, and in two other instances necropsy revealed both abscess and bronchiectasis. For such cases the term "chronic pulmonary suppuration" seems the most adequate, as it does not connote the pathologic anatomy more definitely than the clicinal findings warrant.

The result of treatment herein outlined further substantiates the statements that treatment is difficult and hazardous and that results may be imperfect. If, however, the limitations of treatment are accepted as unavoidable, as in case of resection for carcinoma of the colon, following which the patient must have his fecal evacuations onto his abdominal wall for the remainder of his life, it then does not seem so discouraging to contemplate a bronchiectatic patient coughing up a few ounces of pus each twenty-four hours, or having a persistent bronchial fistula following operation. The criterion is the relative amount of relief afforded the particular patient.

The immediate results so far achieved in the treatment of typical bronchiectasis by graded thoracoplasty would seem distinctly encouraging. The relative safety of the graded operation, the comparative freedom from pain, the amount of collapse of the chest wall, and the relatively slight deformity commend the operation. There was a reduction of sputum on the average of from 50 to 90 per cent, or even more with an associated gain in weight and general improvement.

What the ultimate results will be remains to be determined. Judging from those so far obtained, as well as from the experience of others, it would seem probable that the final results will be unsatisfactory in some cases. For such cases pneumonectomy is contemplated.

The indication for thoracoplasty in chronic abscess in this series of cases was the thick-walled multilocular nature of the abscess and an indeterminate amount of associated bronchiectasis, central location of the chronic abscess with the incident increased risk of hemorrhage in case of drainage, and pulmonary suppuration of the indeterminate type.

From the results obtained the impression is gained that patients with chronic abscess associated with bronchiectasis are less suitable for thoracoplasty, both on account of the greater tendency to recurrence and the proneness to retention of secretion and consequent extension of the suppuration.

If the patients are young and in good general condition, they may prove suitable for pneumonectomy; otherwise, a graded thoracoplasty, possibly combined with thoracotomy drainage, would seem to offer the best prospect for marked relief, if not cure.

In conclusion, emphasis is placed on the fact that an extensive graded thoracoplasty has been performed in six instances of bronchiectasis without mortality and with marked immediate improvement in all. This operation would seem to merit further consideration in the treatment of nontuberculous as well as tuberculous pulmonary suppuration.

(Owing to limitation of space the Bibliography is omitted. It will be published with reprints.)

PERSONAL EXPERIENCE WITH ARTIFICIAL PNEUMOTHORAX*

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According to Allen K. Krause, of Johns Hopkins, Hippocrates used and advised artificial pneumothorax but not for the same indications nor in the same way as at present. One hundred years ago James Carson, of Liverpool, first advised it as a method of treatment and proved its practicability by animal experimentation.

As far back as 1837 it was noted that some cases of phthisis were arrested and a few were cured, following spontaneous pneumothorax. In 1888, Potain reported three cases of hydropneumothorax cured by replacing the fluid by sterilized air repeatedly.

The first attempts to bring about compression were by an incision between the ribs, allowing a complete collapse at once. On 1885, Cayley thus treated a severe hemoptysis and reported it to the clinical society of London.

It remained for Forlanini, in Italy, and

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Murphy, of Chicago, to develop this method of treatment independently of each other and at about the same time. Forlanini did his early work in 1894, and Murphy in 1898. The latter performed the operation with trocar and canula. It was Murphy's publication that lead Brauer to take up the operation in Germany. He introduced the water manometer, reporting his first cases in 1905 and 1906.

All physicians interested in the treatment of tuberculosis are convinced of the great value of rest. Pneumothorax, when complete, brings about such an absolute rest to the diseased tissues, that within a short time a patient, rapidly dying from toxemia, may be changed to a hopeful case. This rest brings about these results in two ways, thru the local mechanical effect and by the removal of toxemia.

The great bar to the healing of the lungs in tuberculosis is their elasticity, the condition of extension and constant movement. As Carson said in 1821, "By collaspse of the lung, the diseased part would be placed in a quiescent state, and the divided surfaces brought into close contact by the same resilient power which before had kept them asunder."

Tubercle bacilli more rapidly disappears from the sputum by this method of treatment than any other; temperature, when the treatment is successful, is rapidly reduced to normal; a rapid pulse is slowed; sputum is often diminished from three and four cups to less than half a cup in the twenty-four hours, and the distressing cough relieved without the use of opiates. Consequently our patient sleeps and is able, probably for the first time, to take care of his nourishment.

Many believe that these results are caused by a favorable hyperemia in the collapsed lung. This is disputed by others who believe the opposite, but one must consider that hyperemia is dependent upon the amount of intrapleural pressure. Some believe that the closing of the lymphatics and thus preventing the absorption of toxins accounts for the benefits, and still others, that in the quiescent lung there is an increased formation of antibodies.

While many workers with this procedure have tried to show that success depends upon a suitable selection of cases, all agree that they have had so many surprises in the work that they no longer pay a great deal of attention to many points that are theoretically important. However, we find that among our cases the number suitable for this treatment varies from seven to ten per cent.

The typical case for this treatment is the patient with progressing advanced disease, limited to one lung. We find, however, that a number of men have been bold enough to attempt pneumothorax, where there were signs of some activity in the apex of the good lung. Experience has shown us that very often these signs must have been transmitted from the diseased side for, if a good collapse is secured, these symptoms frequently disappear in the other lung.

We sometimes observe an improvement or the arrest of a lesion in the better lung after the pneumothorax has been established. This procedure is often carried out as a last resort, and has often been done at the request of patients, who, having tried every other form of treatment, were desperate for help. Often the pneumothorax had been started without an x-ray with splendid results, but, had the physician known before the exact condition of the better lung, he would probably had never attempted the treatment. Therefore, one need not be too critical in the selection of cases, as may be shown with x-ray plates.

An indication for the employment of pneumothorax, which should be emphasized, is hemorrhage, when severe or protracted. Among our series of cases pneumothorax was employed for this purpose in eight cases. Under these conditions a large quantity of gas, as much as 1000 or 1400 c. c., may be necessary to relieve the hemorrhage, altho we have seen 400 c. c. sufficient. Another indication for the use of this operation is pleurisy with effusion. This was done by us in nineteen cases. After the withdrawal of the fluid it is replaced by air, thus preventing adhesions and the too rapid expansion of the compressed lung with its attendant dangers and, for a heavy incompressible substances, is substituted a light compressible one.

Contraindications. Disease of the circulatory organs and the kidneys may contraindicate the production of an artificial pneumothorax. This is due to the fact that the complete collapse of one lung reduces the vascular area and puts a strain on the right heart. The loss or reduction of intrathoracic suction also tends to embarass the venous circulation.

Laryngeal tuberculosis has been mentioned under this heading, but we have seen in three of our cases advanced laryngeal tuberculosis very much benefited, and in two, arrested after the collapse treatment. Intestinal tuberculosis is given as a contraindication, but two of our cases, which were supposed to have intestinal tuberculosis because of prolonged diarrhea, were relieved by means of a collapse.

Pleural Adhesions. If it were not for pleural adhesions, the production of an artificial pneumothorax would be a very easy matter, and likewise our results would always be what we desire. Pleural adhesions prevented the production of a pneumothorax in twelve per cent of our cases. Other men report the same complication in from seven to as high as thirty-seven per cent. It is surprising how often, in spite of adhesions, a collapse can be obtained in the right position to put at rest sufficient of the diseased lung to be of great benefit.

Pneumothorax is classed as partial, effective and complete. Partial pneumothorax is where only a very small amount of air can be introduced. One should not give up the case as being unsuited, until a number of efforts have been made to increase the pocket and to break down the adhesions. While a partial pneumothorax may benefit a patient, it was necessary in our series to discontinue the treatment in twenty per cent because of inefficient collapse. An effective pneumothorax is one where there may be many adhesions, but where a sufficient amount of air can be introduced to bring about results. Fifty per cent of our cases were in this class. A complete pneumothorax is one in which the entire lung is collapsed. This we obtained in twenty-five per cent of our cases.

It was thought, early in the history of this treatment, that by the fluoroscope, x-ray plates, and by the use of the stethoscope, one could make a diagnosis of adherent pleura. We do not feel that this is possible, for in many cases where the disease had existed for as long as ten years, where there was a history of frequent pleurisy, where the x-ray showed a thickened pleura and where the breath sounds were very limited, pneumothorax was often more easily produced than in other cases without such findings and history.

The Operation. The area to select as the site for injection is the one most likely to be free from adhesions. The midaxillary line is preferred, because here the intercostal spaces are wide and the overlying tissue thinner than elsewhere. The places to avoid are those over cavities, the precordium, the region over large vessels, the mamnary tissue in women, and the region posteriorly below the ninth interspace.

It is interesting here to note that the use of the manometer was first introduced in 1905. It has rendered the creation of a pneumothorax safer and easier; it yields definite indications of the presence of adhesions and gives reliable informaton as to where the needle point is situated. While it is not absolutely necessary, it is often a good procedure to give a nervous patient a hypodermic of morphin and atropin about half an hour before the initial filling. We believe that the initial filling is best done with the patient at rest in his home or in a hospital, and, if one is not successful at the first trial, one more attempt should be sufficient at the first procedure. We believe that one should be as careful in his technic as in performing a major operation.

The patient is placed on the side opposite to that which is to be injected, with a pillow beneath to effect a greater separation of the ribs, which is aided by the elevation of the arm on the side effected. The area selected for the operation is painted with tincture of iodin. A sterile sheet with a small opening is placed over the patient. The parts are then anesthetized with a one-half to 1 per cent solution of novocaine, being careful to anesthetize the skin first by injecting the solution intradermally, then introducing the needle slowly, carefully injecting the solution ahead of the point of the needle. One can usually tell when the pleura is reached, especially when it is thickened. During the refils, one can tell when the free pleural space is reached by withdrawing the piston and noticing the bubbles of air enter the syringe. The skin is now punctured with a small sharp pointed knife to facilitate introduction of the pneumothorax needle.

The apparatus is tested to see if it is in perfect working order. We have purchased and tried out all the different needles recommended. These are usually complicated with valves and canulae, making them cumbersome to handle and difficult to keep in good working order on account of rust. We finally settled on the Salomon catheter for initial fillings, and a plain platinum needle for refils. The manometer is connected with the catheter or needle which is then introduced thru the anesthetized area. As soon as the pleural cavity is reached, the manometer will fluctuate with the respiratory movements. In the initial operation the canula is pushed thru the chest wall, the retraction of the lung preventing puncture of the visceral pleura. If there is a free pleural space, the negative pressure causes an inrush of air thru the canula, which is distinctly heard. The catheter is at once introduced, and reading taken.

One must have a negative pressure with a manometer oscillation of at least two centimeters to be sure he is in the pleural space. If the lung has been entered, the manometer moves equally above and below the zero point. Having entered a free pleural space, the air is now turned on and after the introduction of one hundred cubic centimeters a reading is again taken. If there are no adhesions, the reading will be altered very little with this amount but, if there are adhesions forming only a small pocket, one or two hundred centimeters will make a positive pressure.

Formerly it was the custom to introduce large amounts of gas at the first filling, but the majority of operators are agreed that two to four hundred centimeters are sufficient. The second filling is made from two to three days following, and the interval between the filling is gradually lengthened until a complete collapse is established and the pleura adapts itself to the presence of the air. In the refills we ordinarily give from three to five hundred centimeters, depending upon the interval and the rate of absorption, as we think it is better not to allow the lung to reexpand too much.

Complications. Emphysema may occur, especially when the larger needle is used or when considerable pressure is made in order to overcome adhesions. This can be avoided by applying a pad and a tight strap over the site of puncture. Cases are on record where general emphysema was caused by puncture of the lung.

Air Embolism. Some authorities claim that air embolism and pleural shock are synonymous, but the writer from his experience believes they are separate conditions, for there are cases of dyspnea, anxiety and pain, which are not caused by air embolism. In the latter there are convulsive movements, loss of consciousness, which may be followed by paralysis and even death. Giese, of Colorado Springs, reports two fatal cases and Homan and Smith, of El Paso, two resulting in death. We have had two cases, one unconscious for several hours, with complete and prompt recovery on regaining consciousness; the other with similar symptoms followed by right sided hemiplega, which gradually disappeared, but only at the end of a month was recovery complete. Typical symptoms of pleural shock have been experienced in five of our cases.

Pleurisy with Effusion. Some authorities, among them Peters of Albuquerque, claim that, if compression is kept up long enough, 100 per cent will develop effusion. This complication occurred in eleven of our cases and we think that possibly the small needle used is a factor in such a small percentage. Of these eleven cases, the fluid in six became purulent, being loaded with tubercle bacilli. These were all relieved by the formaldehyde-glycerin treatment, according to Murphy.

Spontaneous pneumothorax may occur from a rupture of a tense adhesion tearing the lung. Five such accidents took place in our series. The symptoms are the usual ones found in this accident-pain, dyspnea and more or less shock. It may be necessary to introduce a needle to lessen the pressure. Infected material from the lung is usually admitted in this complication which results in a pyopneumothorax. This we have cured in two cases. Two had bronchial fistula and went on to a fatal termination.

To recapitulate, we have attempted to give one hundred and thirty-six patients induced pneumothorax. Of these seventeen were complete failures, due to the absence of any free space; twenty-two had small pockets in the pleura, partial collapse; sixty-six were effective collapses and thirty-one were complete. Of the whole number of successful cases, twenty were apparently cured, forty-seven improved, thirty-six unimproved or stopped treatment, and sixteen died during the treatment.

THE RELATIONSHIP BETWEEN THE CLINICAL LABORATORY AND THE PHYSICIAN*

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In the limited time allotted me it is obviously impossible to consider in detail the relative merits of the various laboratory procedures which have come into use within the past fifteen or twenty years, and with which the average practitioner is more or less familiar. I shall, therefore, content myself with a survey of only a few of the important or essential procedures, which furnish trustworthy information and which should always be called into service wherever such measures are indicated.

During the late war, some 33,000 doctors entered the military service. Many of the foremost physicians and surgeons answered the call. But many of the medical officers, whose patriotism was 100 per cent American, were men who had not previously attached very much importance to laboratory determinations, and not a few were even skeptical concerning the value of such procedures, or were too indifferent to devote much more than a passing glance in this direction. A great many men in the profession had come to regard the determination of the opsonic index as a procedure too complicated and involved to be of any practical value, and it is quite natural that a considerable number must have felt that many of the newer laboratory methods were equally objectionable and of doubtful value to the busy practitioner.

This attitude of the profession towards the laboratory found expression in such utterances as the following: "Use your eyes, your ears, and your fingers, study your patient, and you will have but little use for much of the finespun stuff turned out by the laboratories." The same thought took shape in other forms, such as this: "A laboratory report is all right in its way, as a check, as confirmatory evidence, but study your patient, rely on your observation and your best judgment at all times."

But the medical officer soon came to realize that accuracy and thoroness were insisted upon in the examination, the diagnosis and the treatment of the sick and injured. A slipshod diagnosis would not pass the division surgeon. If anemia was diagnosed, the type of the disease had to be specified, whether simple, secondary, splenic or pernicious. The same requirements applied to malaria, tuberculosis and the infections generally. The requirements were exacting; they called for precision in the methods employed, so as to sift matters down to finality. As a result the medical officers were made to appreciate the intimate connection between the diagnosis and the laboratory. It is significant, furthermore, that just before the termination of hostilities, there were 1450 officers of the medical and sanitary corps connected with the laboratory division of the medical department of the Army.

Many of the doctors had their eyes opened to the fact that they had not previously made use of diagnostic aids which were daily brought to their attention, means and methods which they might have used to increase their efficiency in private practice, had they only known about them before. It is quite natural that, when these men returned to private life again, they were no longer satisfied with a white count, a hemoglobin estimate or the old routine urinary analysis. Having had their interest aroused in the possibilities in this direction, these men have been instrumental in providing adequate laboratory facilities and equipment for the hospitals with which they have become identified, and have liberally patronized independent clinical laboratories, recognizing the need of such institutions as a legitimate specialty among the subdivisions of medical practice.

There is a growing demand for the higher grade of laboratory service, but medical graduates have not found this field particularly attractive, for the reason that remuneration for service of this kind amounts to a mere pittance, or the volume of work referred is insufficient to justify the maintenance of such an establishment. So the field has been repeatedly deserted by capable men who have tried it out, only to slip back unobserved into general practice again, because of financial considerations. The conscientious laboratory worker, finding the Wassermann test advertised in a medical journal at $2.50, concludes that it is only a matter of time when the test will be offered at $1.98, with proportionate rate-cutting for all other laboratory services, and he quits. Is there any wonder, then, why the laboratory worker, and I mean the medical graduate who prefers this line of work as a specialty, has been largely replaced by the present-day technician?

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The men who have specialized in this direction, and I refer to graduates in medicine devoting their entire time to clinical pathology, should be looked upon as consultants, whose judgment and advice in matters affecting this particular sphere of activity should be worthy of professional confidence and support. It does not seem right to me that lumbar puncture, transfusion and other surgical procedures should be turned over to men who have not taken a degree in medicine, who have never treated the sick, and who are not competent to render an opinion upon important medical or surgical questions. So long as such conditions exist, the clinical laboratory will not advance very far beyond its present status. It will tend to remain a convenience, a place where doctors can get certain routine work done to order, because they have not the time, the facilities or the equipment necessary to attend to such matters themselves.

But allow me to invite your attention to a few of the more important or essential laboratory aids. In the past the diazo reaction was looked upon with favor in the diagnosis of typhoid fever. The test, however, is open to criticism, as it cannot be relied upon in the diagnosis of this disease, as the reaction occurs in tuberculosis, measles and other diseases. In the usual run of cases, the reaction does not occur before the fourth or fifth day from the onset of symptoms, and mild cases may react negatively.

The agglutination test, or Widal reaction, while trustworthy in a majority of cases, is objectionable because it occurs too late in the course of the disease to make it a dependable test, as it may not appear until after the end of the first week, usually within seven to ten days from the onset. The serum of individuals with ailments other than typhoid will sometimes yield a more or less typical reaction of agglutination, and thus throw the doctor completely off the scent.

If these tests are too slow and inaccurate for practical purposes, how then can the diagnosis of typhoid be made by more reliable means? The answer is this. In a case of suspected typhoid, get an immediate blood culture, and at the same time a white and differential leukocyte count. During the first few days there is often a moderate but temporary increase in the total number of white cells, running as high as 12,000, but a leukopenia is almost certain to follow, with a relative increase in the number of lymphocytes. A report on the blood culture can be made within twenty-four hours, and it is safe to say that the typhoid bacillus can be demonstrated in the blood stream in practically 100 per cent of all cases so examined within the first week of the disease. Furthermore, if the proper culture media are used, and a differential test is run at the same time, paratyphoid can be eliminated and the disease diagnosed with certainty. Why waste valuable time looking for rose spots, watching the temperature chart, or awaiting the arrival of other symptoms, when you can get prompt and reliable information by means of the methods advocated? Yet it is astonishing how very few doctors call for a blood culture in cases where typhoid is suspected.

If the patient is seen for the first time after a week or more has elapsed since the onset of symptoms, of course the aggultination test may be tried, and usually with success; or the feces and urine can be cultured and the organism demonstrated in that manner; but the point to remember is that blood cultures can be relied upon during the first week in practically 100 per cent of all cases examined for typhoid.

The exact nature of the specific antibody present in the blood serum of a syphilitic is not known. It may be related to the globulins, it may be a cholesterin-like body, or a lipoidal substance, but whatever its nature may be, its presence is the thing which produces a positive reaction in the Wassermann blood test.

At times and under conditions not well understood, but presumably during the existence of some temporary disturbance in lipoid metabolism, the blood serum of a nonsyphilitic may show a positive reaction. In leprosy and in yaws the reaction is usually positive. A positive reaction may occur in advanced cases of diabetes. It has occurred in pneumonia, scarlet fever, typhus, malaria and cancer. Such reactions, however, are not the rule, but the exception in diseases other than syphilis.

The presence of bile in the blood may give a positive reaction. This also holds good for blood drawn soon after a full meal. The specimen should always be taken several hours after a meal, and preferably after a fourteen-hour fast. Blood should not be taken from a person recovering from an alcoholic bout, as it is likely to show a misleading reaction.

The reaction is generally negative in primary syphilis (chancre stage), but serum expressed from the chancre and examined directly by dark ground illumination, or by any reliable staining method, will almost invariably show the presence of the treponema pallidum. The reaction soon becomes positive, however, and remains persistently so as the disease progresses. In latent syphilis it tends to grow weaker. The reaction becomes negative under specific treatment, usually between the second and fourth weeks, if the dosage is heavy enough; but, if treatment is insufficient or suspended for any length of time, the reaction becomes positive again.

In early secondary syphilis, active stage, the reaction is positive in nearly every case. When the disease is latent, from 10 to 20 per cent yield a negative reaction. In tertiary syphilis, active form, approximately 90 per cent show a positive reaction; but in the latent form, from 20 to 25 per cent are negative.

When the blood serum shows negative in late secondary or in tertiary syphilis, the cerebrospinal fluid generally shows a positive reaction. In paresis the blood serum and the spinal fluid are over 95 per cent positive, while the colloidal gold test shows the characteristic "paretic curve."

Pronounced reactions, three and four plus, are almost always indicative of syphilis, even in the absence of definite signs and symptoms. Weak reactions, one and two plus, should not be taken as a safe criterion in the diagnosis of syphilis, in the absence of confirmatory signs or a definite history of previous infection.

The collection of the specimen is an important matter. Never use anything but a perfectly dry, sterile needle. The container should also be clean and dry but not necessarily sterile. The presence of even a small amount of water may partially hemolyze the blood and destroy its value as a specimen. After drawing the blood, the container should stand at room temperature for an hour or two, and should not be disturbed, as shaking may spoil the specimen.

The degree of reaction cannot be stated in terms of percentage. A report of 60, 70 or 80 per cent positive is nothing more nor less than a rough estimate. On the other hand, the plus sign system of recording reactions seems to answer the purpose for which it was intended very well. Four plus means complete fixation of complement, and no trace of hemolysis. Three plus means nearly complete fixation of complement, degree of hemolysis slight. A two plus means that fixation of complement and degree of hemolysis are about equal, while a one plus means slight fixation of complement, the degree of hemolysis being nearly complete. For a satisfactory test every Wassermann should be run with a known positive serum, a known negative serum, two different antigens, and a set of control tubes in which no antigen is used.

The Wassermann blood test is, therefore, not infallible, but due allowance should be made for its limitations. In the vast majority of cases, and as compared with other recognized procedures, the test can be relied upon as one of our most valuable diagnostic aids.

From time to time every physician finds himself confronted with a vague history of illness and an indefinite group of symptoms, the analysis of which may afford not even a remote clue as to the cause of the patient's complaint. In such cases one is apt to suspect an endocrine disturbance or a focal infection somewhere. In just such cases as these, in which there is nothing clearly defined, yet presenting, say, such symptoms as headache, weakness, inability to perform the usual work, nodules beneath the skin, enlargement of the liver or spleen, loss of weight, failing nutrition, anemia, etc., a complete microscopic examination of the blood will often enable you to decide at once on one of the anemias or leukemias, multiple myeloma, lead poisoning, intestinal parasites, malaria or some other unsuspected condition, much to your satisfaction as well as that of the patient.

Any material increase in the number of eosinophiles is distinctly pathologic. An increase of over 3 per cent should be regarded as significant. Eosinophilia occurs in practically every case of intestinal infestation by worms, hook worms, round worms, tape worms, and other parasites, ranging from 5 to 50 per cent. Eosinophilia also occurs in trichinosis, echinococcus disease, blastomycosis, mycosis fungoides, urticaria, pemphigus, psoriasis and scabes. In asthma the number of eosinophiles is notably increased in the bronchial secretion, during and following the paroxysm, as well as in the blood. In echinococcus disease these cells disappear soon after the removal of the cyst, but their persistent presence indicates that some cysts have been overlooked. Eosinophilia occurs in other diseases than those mentioned, such as mucous colitis, Hodgkin's disease, serum sickness, myelogenous leukemia and scarlet fever. A moderate eosinophilia will help you to distinguish between scarlet fever and measles, as it is believed not to occur in the latter disease. Also remember that children have normally a greater number of eosinophiles than adults, just as they have normally a larger percentage of lymphocytes. Your office girl might help you to dig up all the foregoing facts, but if she did not know that eosinophilia is almost always present in celluloid workers, you might have reason to wonder why you failed to remove a forty-foot tapeworm from a moving picture operator, after prescribing a vigorous anthelmintic.

The significance of any marked increase in the number of polynuclear leukocytes seems to be quite generally understood, yet I often find that a physician will call for a white blood count, when he really means a total white and differential leukocyte count. Nothing much can be learned from a white count alone, but studied in connection with a stained blood specimen, in which the various types of leukocytes are clearly differentiated, it is one of our most valuable aids, so it is obvious that the request should be for a white and differential report.

It is well to bear the following facts in mind. The percentage of polynuclear cells is an index to the severity of the infection, or, one might say, to the degree of toxic saturation of the body, while the number of cells in the total count is an index to the patient's power of resistance. A correct interpretation of these two points is of the greatest importance to the physician treating a case of pneumonia, or to the surgeon in dealing with a case of appendicitis, or any acute abdominal condition, especialy from a prognostic standpoint. If the percentage of polynuclears runs as high as 85 per cent or over, you may suspect an accumulation of pus somewhere, peritonitis or even gangrene. In lower percentages than 80 one is not so likely to encounter suppuration, excluding, however, the acute infectious diseases, phlebitis, and septicemia.

If the total leukocyte count is low and the percentage of polynuclears high, you are dealing with a severe or virulent infection, poor resistance or both. In moderate degrees of infection, with good resistance, the total count and the polynuclears are increased proportionately. A leukocytosis occurs in nearly all infectious diseases, the exceptions being very few, such as measles, German measles, tuberculosis, typhoid, paratyphoid and possibly a limited number of other infections.

If an inflammatory condition is slight or walled off, you may not find a leukocytosis; on the contrary, an increasing leukocytosis indicates a continuous or spreading process, and demands operation. A leukocytosis occurs in about 50 per cent of all malignant diseases and more commonly in sarcoma than carcinoma. In ruptured tubal pregnancy the count ranges from 18,000 to 28,000 or over. But limited time necessarily curtails any further details along this line.

The colloidal gold test, tho seldom called for, is an important diagnostic procedure. The preparation of all the reagents used in this test requires the greatest care; the glassware used must be absolutely clean. The chief use for this test is in the diagnosis of general paresis, in which condition it is considered of even greater value than a Wassermann. It is useful in indicating other forms of syphilis of the nervous system, and is a fair index in meningitis. In the diagnosis of meningitis, however, it should be used in connection with the sulphosalicylic acid and mercuric chloride ratio test for confirmatory purposes.

The specimen of cerebrospinal fluid submitted for a colloidal gold test must be absolutely free from blood, as the reaction depends upon the presence of soluble proteins in the fluid. The specimen can be kept for some time on ice, and can be used for a Wassermann as well as a colloidal gold test, but a cell count had better be made from the freshly drawn cerebrospinal fluid than from a specimen so preserved.

To guard against anaphylactic shock, it is always advisable to make a preliminary test for susceptibility, since quite a number of fatalities have followed the injection of a foreign serum. Therefore, inject 2-10 of a cc. of the serum, diluted 1 to 10 with normal salt solution. If susceptible, the patient will develop an urticaria in from five to ten minutes. Asthmatics and others sensitized to the serum will show this anaphylactic manifestation promptly. If no reaction occurs in two hours, the full dose may be safely administered. If the patient shows marked sensitization to the serum, small doses may be given subcutaneously every half hour, commencing with 1-50 of a cc. and gradually increasing to 1 cc., as recommended by Vaughan.

Within the past ten years blood chemistry has advanced rapidly and is taking its proper place among other laboratory determinations. There are a number of practical tests with which the internist and the surgeon should be familiar, a few of which may be mentioned in passing. Especially helpful are the quantitative determinations for blood sugar, blood urea, uric acid, creatinin and nonprotein nitrogen. A blood sugar examination will make the early recognition of diabetes possible. It is a refinement in diagnosis and a better guide to treatment than the routine examination of the urine. Hyperglycemia may not be sufficiently marked to produce a glycosuria, and diabetes in its early stages may be overlooked, if one relies entirely upon the usual methods for examination of the urine.

Hyperglycemia may be responsible for a number of symptoms, the causes of which are often difficult to find, such as neuritis, weakness, loss of incentive, boils, carbuncles and even gangrene. Glycosuria may be the result of renal disease, and not due to hyperglycemia as in true diabetes, but this distinction cannot be made without a blood sugar determination. The information one can derive from the other determinations mentioned will serve as a guide as to what the kidneys are doing by way of elimination or retention.

In collecting a specimen of blood for any of these tests, two milligrams of potassium oxalate are required for each cc. of blood taken, to prevent coagulation, or 20 mg. for each 10 cc. collected. If this precaution is not taken, the specimen would be worthless for any of these determinations.

In conclusion, I would say that the education of the special senses, however acutely developed, will take you just so far and no farther, because their range is strictly limited. The microscope carries direct observation a long distance beyond the possibilities of the naked eye. Chemistry tells a story which is scientifically true and accurate and, when properly interpreted, the information derived from this source will be found most valuable.

The laboratory enlarges the field of vision, and extends your diagnostic powers thru these agencies far in advance of what would be possible without it. It is this important point which none should overlook in checking up the value of clinical laboratories to the profession at large. The clinical laboratory is rendering services of great value to the profession at many different points of contact. The laboratory worker is interested in all your diagnostic difficulties, and in exchange for the efficient cooperation he is prepared to extend to you, in helping you solve some of your daily problems, he is entitled, I believe, to a degree of professional recognition befitting the character of the services he is able to perform.

DIRECTORY OF MEDICAL SOCIETIES

The directory of medical societies, published in this journal (page 24), contains many errors in names of officers, because annual changes, following elections, have not been reported. It is requested that existing errors shall be pointed out and future changes of officers be reported to the editor.

NEW ADVERTISEMENTS

Attention is called to the Robinson Electric Blanket (page 23), formerly advertised in this journal, an improvement over the hot water bag. Belleview Sanitarium (page 22) is an institution for mental and nervous diseases.

The Medical Record Visiting List (Physician's Diary) for 1923. William Wood & Co., New York.

This physician's visiting list or diary has been changed to a perpetual list, so that one can start it any year. It contains the tables and other useful information of former issues. It is prepared for 30, 60 or 90 patients per week, at prices $1.75, $2.00 and $2.50.

NORTHWEST MEDICINE
The Journal of the State Medical Associations of Oregon, Washington, Idaho and Utah
Devoted to the Interests of the Medical Profession of the Pacific Northwest
Editorial Office, 323 Cobb Building, Seattle, Wash.
DECEMBER, 1922

EDITORIAL

FINANCING THE STATE ASSOCIATION

In past years the problems of financing the state medical association has been comparatively simple, since its activity consisted substantially in holding an annual meeting with a program of papers and social functions. Its destinies were presided over by a secretary, whose duties were mostly nominal and whose emoluments were confined to the honor incident to the office. In recent years, however, the association activities have been broadened to such an extent that the usual medical secretary can no longer adequately attend to them and a paid employee has become essential.

Medical defense has of recent years been adopted by many of the state associations. At first it was maintained by dues paid by the members who appreciated its benefits thru personal experience with its results. Since it has been demonstrated that every malpractice suit successfully defended confers protection on all members of the profession, and the existence of such defense has proven effective in greatly reducing these malpractice suits, it has seemed just and reasonable that all members of the association should participate in the necessary expenses of this defense fund. Accordingly some of the associations have adopted this as one of its liabilities. More recently the public health league has functioned as an important factor in health and sanitary matters in our Western states. At the outset this league was supported by contributions on the part of a few liberal minded and far seeing members. It has existed a sufficient length of time to demonstrate its benefit to the medical profession and the general public. Since every member of the profession participates in the advantages of its activities, it would seem that its maintenance by the state association might well be considered.

At the recent annual meeting of the Oregon Association these matters were discussed and it was decided that all of these features should be adopted. To carry them out it was voted that the League for the Conservation of Public Health should be absorbed and replace the Committee on Public Health and Sanitation. Since the necessity of a paid secretary was obvious, it was voted to employ one paid secretary for both organizations. Already medical defense is conducted by the Association for the benefit of all its members. In order that all these association interests may be properly financed, it was voted to place the annual dues at twenty dollars per member. On the principle that what one pays for is of more vital interest than that which he receives without personal outlay, it is believed that each member will thus have a more direct interest in these various association activities and they will prosper in proportion to the increase of such interest. Altho it was anticipated that the membership might temporarily decrease in consequence of the increased dues, it is believed that eventually all members will appreciate its necessity and the benefits which will ensue. It is already reported that a number of county societies have endorsed the measure and it is expected the same course will soon be generally followed.

LEGISLATION BY ELECTION.

Since the referendum was adopted by the people of Washington several years ago it has many times been criticised and measures proposed for its elimination. Some have thought it a pernicious measure and productive of more evil than good. Its existence was justified at last month's elections, when the voters had the opportunity to nullify the vicious measure passed by the last legislature by a large majority, permitting parents who were so disposed to prevent a physical examination of their school children for the detection of conditions of disease. When this law was passed two years ago it was received with much indignation thruout the state. The fact that it did not meet popular approval is indicated by the recent vote which reverses the legislative action by a two-thirds majority. If the referendum had not been in existence.

this pernicious measure would have been at work during the past two years. One can easily imagine the conditions of illness which would have probably afflicted the people, if diseased children had been permitted to freely mingle with the healthy in school rooms. This result is proof that the majority of people still have their feet on the ground and are not carried away by the delusions of sentimental and religious enthusiasm. This great victory is a triumph for the Public Health League and its officials, whose labors thruout the state, supplemented by many others, prepared the field for this fruitful harvest and accomplished the final result.

ABOLISH SMALLPOX QUARANTINE

The purpose of maintaining quarantine in the presence of an infections disease is to prevent its contraction by people in the vicinity of the patient and its transmission to others at a distance. The methods of obtaining this result are often elaborate and burdensome. It entails labor and inconvenience, as well as material expenditure of money. If the burden of this procedure could be eliminated, much advantage would accrue to all concerned.

Smallpox is the outstanding communicable disease which can be prevented and avoided by means of vaccination. There is no danger of people contracting this disease who have been recently successfully vaccinated, and there is no reason in these days for its existence. Those people who oppose vaccination and claim they would prefer to have smallpox should be granted the privilege of contracting the disease. They also should be given the opportunity of bearing the labor and expense of its treatment and thus relieve the public of this wholly unnecessary burden. There is no reason why such cases should not be treated in their own homes the same as any other disease which people care for and attend with impunity. Such a procedure would be one of the most effective means for the eradiction of smallpox.

These views are illustrated by the present epidemic in Denver, where on a given date 267 cases had been reported. Of these, 195 had never been vaccinated. There were 74 deaths, 67 of which were from the unvaccinated. The remaining seven had not been vaccinated for periods from fifteen to seventy years. About half of these cases were treated in their own homes. When this epidemic became well established there was probably a stampede on the part of christian scientists and other antivaccinationists to obtain vaccination for themselves and families, as commonly occurs under these circumstances. There is every reason to expect similar epidemics in all of our large cities in the near future, since a generation of unvaccinated people exists thruout our land. Compulsory vaccination has been abolished in many of our states and it is certainly illogical under these circumstances to maintain enforced quarantine. Let us abolish the quarantine against smallpox.

LECTURES ON ENDOCRINOLOGY

The annual lectures before the Portland Academy of Medicine will be delivered on the evenings of Thursday and Friday, January 11-12, by Dr. R. G. Hoskins, Professor of Physiology, College of Medicine, Ohio State University. The doctor is editor of *Endocrinology* and associate editor of *Endocrinology and Metabolism.* The first lecture will be on "Constructive Endocrinology," and the second on "Some Endocrine Problems." The doctor will give a correct estimate of the present status of endocrinology and will discriminate between the facts that have been learned regarding the endocrine system and the imaginative nonsense that is being published under the term "endocrinology".

A dinner will be given in honor of Dr. Hoskins at the Portland Hotel on the evening of January 11, at six p.m. The Portland Academy of Medicine extends an invitation to all physicians of the Pacific Northwest to attend these lectures and the dinner. Those expecting to attend the dinner will notify the secretary, Dr. J. Earl Else, 709 Stevens Building, Portland, so that reservations can be made.

INFECTIOUS JAUNDICE

This disease is nonreportable and therefore information regarding its prevalence cannot be obtained from boards of health. Outbreaks of this disease sometimes occur. Dr. George Blumer, 195 Church Street, New Haven, Conn., is desirous of obtaining information regarding the prevalence of any cases of this disease. If any of our readers are cognizant of such cases, they are requested to report them to Dr. Blumer.

MEDICAL NOTES

Magazine Editor. After eighteen years service as secretary of the Council on Health and Public Instruction, Dr. Frederick R. Green has severed his official connection with the American Medical Association to become editor of Health, "a national magazine for home, school, industry," published in Chicago.

Hospital Standardization Blanks can be obtained from the Holly Press, the details of which appear in their advertisement on page 455.

OREGON

Central Willamette Medical Association held a meeting at Albany, Nov. 3, ninety-one physicians being present. Thirty-five members of the Marion-Polk-Yamhill Association were guests at the meeting. A movement was adopted endorsing the $20.00 annual dues adopted by the state association. Dr. J. B. Bilderbach, of Portland, read a paper on hyperthopic pyloric stenosis. Dr. Koehler, of Portland, presented a paper on gastric ulcer. Dr. Fitzgibbon, of Portland, detailed the Sippy treatment for gastric ulcer.

Opening of Hospital. The new St. Anthony's Hospital at Pendleton was formally opened Oct. 22. It adjoins the old structure built twenty years ago. It is a four story and basement building, constructed of reinforced concrete. The building and equipment cost $300,000. It has accomodations for one hundred patients. The surgery occupies the fourth floor and all the equipment is modern and up-to-date. It is in every respect a modern and efficient institution.

Elected Mayor. Dr. Phil J. Keiser was last month elected mayor of North Bend by a large majority. At the same time Dr. H. E. Burmester, of the same city, was elected to the council.

WASHINGTON

New Hospital Contemplated. The Government has asked for bids on the new Veterans' Bureau Hospital which is to be constructed at American Lake, near Tacoma. The hospital group will comprise about twenty-five buildings of brick and tile construction. The entire cost will be about $1,500,000. The largest building, one hundred fifty feet square and two stories high, will be the infirmary, containing elaborate laboratory equipment. It is expected that the institution will be built in about a year.

Hospital Enlarged. The Kelso Hospital is being increased by an addition which will treble its capacity. A modern surgery is to be installed.

Schools Closed. During a part of October and November the school, churches and moving picture shows at Granger were closed in consequence of an outbreak of diphtheria and spetic sore throat. After ten days the situation cleared and the schools were opened.

Skagit County Medical Society held a meeting Nov. 9, at Sedro-Woolley, at the Northern Hospital for the Inssane. Dr. D. A. Nicholson, of Seattle, read a paper. The meeting closed with a banquet.

Snohomish County Medical Society held a meeting at Everett, Nov. 9. Dr. James Chisholm read a paper on brain injuries. Dr. O. A. Thomle presented a paper on physical properties of the x-ray.

Elected to Legisuature. At last month's election the following physicians were elected to the state house of representatives: Drs. A. F. Brockman, of Bickleton; V. J. Capron, of Friday Harbor; H. A. Mount, of Waitsburg.

Dr. A. T. Wanamaker, of Seattle, has returned after a period of travel and study in Europe.

Dr. J. L. Lane, of Seattle, has returned home for practice after a year's study in Europe.

Dr. B. G. Godfrey, of Chehalis, has moved for practice to Tacoma.

IDAHO

Southern Idaho District Medical Society held a meeting at Boise, Oct. 29, attended by more than fifty members. Dr. C. D. Weaver, of Twin Falls, read a paper on Chronic Splenomegalic Hemolytic, Jaundice, Familial Type. Dr. E. E. Maxey, of Boise, gave a historical sketch of the x-ray and the results of its use. Dr. Joseph Aspray, of Spokane, gave an illustrated address on x-ray. At the dinner addresses were given on several subjects. Dr. S. B. Dudley, of Caldwell, gave an address on Medical Experiences in Mesopotamia following the armistice.

Elected to the State Senate. At the election last month, Dr. W. F. Fike, of Twin Falls, was elected to the state senate.

OBITUARIES

Dr. Warren Brown, of Tacoma, Wash., died Nov. 9. He was taken ill on rising and died within an hour. He was 63 years of age and had practiced in Tacoma for more than thirty years. He was born in Decatur, Ill., the son of a physician from a long line of professional men dating back to Revolutionary days. He was a graduate of Rush Medical College.

Dr. F. M. Boyle died in Seattle, Wash., Nov. 7, after an illness of several months. He was 49 years of age. He went to Alaska in 1902 and engaged both in the practice of medicine and in mining, in which he amassed a fortune. He served in the first territorial legislature in 1913. He built hospitals at Valdez and Anchorage and opened drug stores at Valdez, Cordova, Seward and Anchorage.

Dr. W. W. Stewart died in Seattle, Wash., Oct. 22, after an illness of several months. He was 38 years of age. He practiced in Chehalis for a number of years before moving to Seattle three years ago.

Dr. R. F. Noth died at American Falls, Idaho, Oct. 29. He had practiced for many years in this city and was mourned by a large circle of friends. Death resulted from pernicious anemia with which he had been afflicted for a long period.

REPORTS OF SOCIETY MEETINGS

OREGON STATE MEDICAL ASSOCIATION

MINUTES OF THE FORTY-EIGHTH ANNUAL MEETING OF OREGON STATE MEDICAL ASSOCIATION, PORTLAND, ORE., OCTOBER 26 AND 27, 1922

House of Delegates

FIRST SESSION OCT. 26, 9 A. M.

The date of the meeting of the annual meeting was postponed this year because of many other important medical meetings in the spring, and also to bring the meeting at the same time as the Oregon State Health Exposition.

The meeting was called to order by the President, Dr. C. J. McCusker. In the absence of the Secretary, Dr. F. A. Kiehle acted as secretary pro tem.

Roll call showed the following officers and delegates present: Drs. C. J. McCusker, C. J. Smith, E. B. McDaniel, Jessie M. McGavin, Paul Rockey, R.C. McDaniel, M. B. Marcellus, R. E. Watkins, W. Johnston, and F. A. Kiehle, of Portland; A. L. Houseworth, of Marshfield; J. Bartle, E. R. Gullion, A. H. Ross, and Bertha Stewart, of Eugene; Quenton Tucker, of Forest Grove; H. J. Clements and C. W. Southworth, of Salem.

PRESIDENT'S ADDRESS

To the House of Delegates:

I wish to take this opportunity to express my sincere appreciation for the honor which the members of the Oregon State Medical Association have conferred upon me by electing me president of this organization. The Council during the past year has shown an unusually high average of attendance and the interest in the affairs of the Society has been particularly marked.

I wish to bring to your minds today the purposes of this organization. Article II, of the Constitution, states that "the purposes of this Association shall be to federate and bring into one compact organization the entire medical profession of the state of Oregon with a view to the extension of medical knowledge and to the advancement of medical science; to the elevation of the standard of medical education and to the enactment and enforcement of just medical laws; to the promotion of friendly intercourse among physicians and the guarding and fostering of their material interests and to the enlightenment and direction of public opinion in regard to the great problems of public health, so that the profession shall become more capable and honorable within itself, more useful to the public in the prevention and cure of disease and in prolonging and adding comfort to life."

I have read you the purposes of this organization so that you will realize how far we have fallen short of the mark set up by those who framed the constitution and to which we have subscribed by becoming members. It is this lack of performance of duty that accounts for other organizations entering the field to do what this Association should be doing.

For many years this organization has had its annual meeting, lasting two or three days. The Council meets six or eight times during the year, reviews the finances, appoints committees and prepares a program for the next annual meeting. Having been an officer of this Society for several years, I feel that I am guilty of not carrying out the purposes of this Association. In order to have a real live, functioning society three hundred and sixty-five days in the year, this organization should have a full time secretary, as it is absolutely impossible for any physician carrying on his practice to take care of the duties that are coming constantly to hand and do his regular work.

At this point the League for Conservation of Public Health might well join with the State Medical Association. The League could function as the Committee on Public Policy and Legislation, and instead of our present method of appointing a committee on Public Policy and Legislation annually, I would suggest that a committee such as the Executive Committee of the League be elected for a term of five years, drawing lots to begin, so that each one would serve one, two, three, four, and five years and, thereafter, each year one member would be elected for a period of five years, this election to be by the House of Delegates, or in open meeting, as you may decide, the President, President-elect, and Secretary to be ex-officio members of the committee. We would thereby make the League a part of the state organization and at once make the League membership 100 per cent of the state association. I propose this because it seems to many that the purposes of the League and the State Association are practically identical and there is no reason why we should have two organizations in the field attempting to do the same work.

We are in great need of a Bulletin for the purpose of reaching directly and in a more personal way, every physician in the state, a Bulletin that will publish the program of the Association proceedings of each component society of the state organization, that will advise the physicians of the state as to pending legislative matters and carry to the members instructions from the Committee on Medical Legal Defense. It is not intended that the Bulletin will in any way take the place of Northwest Medicine, but will act as an adjunct in carrying more local and personal news to the physicians of this state and thereby create more active interest in medical affairs.

Such a program calls for an increase in our yearly dues, to which, there will no doubt, be objections, but we must realize that since the time that this Association was organided, nearly fifty years ago, when the dues were fixed at $2.50 per year, many changes have come about.

The time required to gain a medical education and the cost of the same has been greatly increased. During the many years of inactivity of this organization there have come many cults that are daily taking from us the work that rightfully belongs to the physician. A student in our own University Medical School requires seven years of training after leaving the high school before he gains his medical degree. We do not believe that there is one of them that would object to spending several times $2.00 per year to protect his investment.

The spreading of this over the whole membership will make the cost small for the benefits to be received. This is well illustrated when we compare our Medical Legal Defense Fund in this state, spread over the whole membership costing $3.00 per year, with the State of Washington, where it is voluntary and costs $10.00 per year for medical legal defense such as we have, and $4.00 per year for annual dues, making a total of $14.00. Besides, many of those members are solicited to support the League.

A few years ago, when the dues were increased $3.00 per year to provide for medical legal defense, there were many objections. In one part of the state several physicians withdrew from the Association rather than pay this $3.00 for medical legal defense, not realizing that the physician who lives in a remote part of the state is the one that costs the defense fund the most in case of suit. One case in Eastern **Oregon** cost the defense fund over $400, while no suit has ever cost the defense fund more than $250 in the city of Portland.

In order to provide for a full-time Secretary who will also be Secretary for the League, provide for a Bulletin, $3.00 to the Medical Legal Defense Fund, and $1.00 for Northwest Medicine, it will be necessary to raise the annual dues to $15.00 per year. With a membership of about seven hundred, this will provide $7,700.00 more than our present income. The Secretary's report will further impress you with the need of more financial support from the membrship.

I would further suggest that, in addition to the standing committees which we now have, we amend our By-Laws, so as to add to standing committees which we already have, a committee on Public Health, Hospital Standardization, Child Welfare, Conservation of Vision, Cancer, and Tuberculosis.

This House of Delegates has the power to establish such committees as it may see fit to do, without changing the By-Laws.

(Signed) C. J. McCusker, President.

REPORT OF THE SECRETARY FROM JULY 1, 1921, TO OCTOBER 27, 1922

To the Members of the House of Delegates:

Membership—The membership of the various constituent county societies, which is the membership of the Association, according to the records in the Secretary's office on Oct. 26, 1922, is 691. The membership for 1921 was 637. The gain of 54 members covers a period from July, 1921, to Oct. 1922. Those who have been kept on the books from 1917 to 1920 with dues unpaid have been dropped. The constitution provides that members are delinquent who have not paid their dues for the preceding year. What shall be done with the ones owing for 1920 and 1921?

Financial Standing of the Association—In addition to the report of the Treasurer, I wish to call attention to the deplorable financial condition. The fiscal year began with a deficit of $670.32, which is itemized as follows:

Bills Unpaid in June, 1921

Printing	$ 30.25
Stenography	74.75
Postage	.84
Northwest Medicine	159.67
Anti-vaccination Bill	500.00
Telegrams	5.56
	$ 771.07
Balance in treasury, on account of vouchers not in in time	100.75
Deficit	$ 670.32

Total receipts for 1922 .... $2,477.50

Two-fifths of this is put into the General Fund and three-fifths into the Defense Fund.

General fund	$ 991.00
Defense fund	$1,486.50

Of the $991.00 for the General Fund, one-half is due Northwest Medicine, leaving a balance of $495.50 for the entire expenses for the year.

The present dues for the State Association are $5.00 a year. This is entirely inadequate, since $3.00 of each $5.00 is put into the Defense Fund, which now has a total of $5,414.70.

The following table shows dues unpaid:

Society	Members	Dues Unpaid
Portland, City and County	384	$ 840.00
Baker	12	25.00
Central Willamette	66	310.00
Clatsop	21	105.00
Coos and Curry	18	25.00
Eastern Oregon	44	130.00
Klamath-Lake	15	80.00
Polk-Yamhill-Marion	58	160.00
Southern Oregon	21	25.00
Tillamook	8	40.00
Union	12	45.00
Washington	11	50.00
Jackson	21	20.00
	691	$1,855.00

Central Oregon. Nothing has been heard from this society since 1920.

The bills for general expense from July, 1921, to Oct. 1922, amount to $853.01. ($319.50 of this was paid on a loan of $650 due Dr. W. T. Williamson. This was done to meet the emergency due to lack of funds in the treasury.)

The $853.01 does not include the back bills of $670.32.

I suggest that the dues of the State Association be paid directly into the State Treasury, and that the dues for the next year become payable on the first of the new year. There are 691 members in the Association, and, if every one were paid up to date, that would allow $691.00 for general expense, and it cannot be done.

According to the Treasurer's report the following bills are still unpaid:

Northwest Medicine	$166.50
Clerical Services July 1921 to Oct. 1922	256.00
Balance on Note (Dr. W. R. Williamson)	350.00
Total	$772.50
Minus the balance in treasury	30.62
Deficit	$741.88

During the past year more than 500 letters have been sent out from the Secretary's office. These include many inquiries from the American Medical Association relative to our membership, correspondence with other state associations, beside the necessary correspondence with our own members. In the early days of the association, when the membership was small and its activities were rather limited, it was perfectly feasible for the Secretary to be in touch with various activities, but now that the Association is growing and medical problems are very different from these of former years, the duties of the officers of the State Association are onerous. The business of the Association has been carried on thru more or less regular meetings of the Council and Officers, but conditions are such that the time is rapidly approaching when the business administration must be put upon a firmer basis.

An important contact with the American Medical Association is the Annual Meeting of the State Secretaries. Your next Secretary should be elected with this definitely in view. The American Medical Association pays the railroad fare and $5.00 a day for expenses while attending the meeting.

Charters—Two new charters have been granted, one to Jackson County and one to Union. The Jackson County Society is also a member of the Southern Oregon Medical Society. The question arises as to which society the members should pay dues and thru which dues should be transmitted to the state organization. A similar condition exists in the Eastern Oregon Medical Society.

Obituaries—During the past fifteen months the following members of this Association have died: Dr. A. Tilzer, Dr. C. E. Staffin, Dr. Wm. DeMuralt, and Dr. Constance Klecan, all of Portland, and Dr. Hays of Baker.

Malpractice Suits—One of the most successful and satisfactory activities of the Association is the work of the Medical Defense Committee, as shown in its report.

The Program—If there is any paucity of papers by members of the Association on the program, the fault cannot be that of the Program Committee. Every local society was asked eight months ago to contribute to the program. Our guests outside the state volunteered to come and pay their own expenses, since there is no provision of funds for this purpose.

(Signed) T. Homer Coffen, Secretary.

Dr. C. J. Smith moved that this report be accepted and referred to a special committee of three, later amended to five members, including the President, who should give it careful consideration and report to the House of Delegates at its next meeting.

TREASURER'S REPORT

	General Fund	Defense Fund
July 1, 1921, Balance in Bank	$ 100.75	$4,612.39
Received from the Secretary	990.03	1,487.47
Interest on D. F.	....	243.72
Borrowed from Dr. Williamson for General Fund	650.00	....
	$1,740.78	$6,343.58
Total Expenses to date	1,876.90	683.19
Balance		$5,660.39
Note to Dr. Williamson		$ 350.00
Deficit		136.12
Society in debt for General Fund		$ 486.12

(Signed) J. M. McGavin,
Treasurer.

Motion carried that the Treasurer's report be accepted and referred to the same special committee.

The President thereupon appointed the following to serve on this special committee: Dr. C. J. Smith, chairman; Drs. Clements, Bartle, E. B.

McDaniel, C. J. McCusker; the President being a member.

REPORT OF COMMITTEE ON HOSPITAL STANDARDIZATION

Your special committee appointed on Hospital Standardization begs to report as follows:

All our investigations were made at the request of the Council on Medical Education and Hospitals, of the American Medical Association.

We investigated, on Oct. 24, 1921, an Institution on Williams Avenue, in the City of Portland, which had undergone some criticism in the past. We learned, however, that the lady in charge had retired from the business in which she was engaged and that, therefore, there was nothing further required to be done, and reported accordingly.

On Nov. 4, we inspected the Salvation Army White Shield Home, located at Mayfair and Alexandria Streets, Portland, which had been transferred from the Salvation Army Rescue Home, and was then in charge of Dr. Allen P. Noyes, in conjunction with a staff of reputable specialists and found that they also conducted clinics for the students of the Medical Department of the University of Oregon. We were able to recommend this institution as being well managed and doing very creditable work.

We secured an adjustment, on Nov. 10, of the relations between St. Vincent's Hospital and the Annex, and had the same reported for maintenance of correct record and were very courteously treated by the authorities of the hospital.

We investigated Emanuel Hospital, situated at 212 Stanton Street, in this city, on March 6, 1922, with a view of determining whether they were organized and prepared to handle interns in connection with their work. We found they had a good system established, in charge of responsible men who were undertaking to see that the interns would be properly supervised, and in accordance therewith we recommended the acceptance of the application of that hospital, which was granted.

April 10 we made inquiry into the situation and equipment at the Portland Eye, Ear, Nose and Throat Hospital, 616 Lovejoy Street, with a view of determining if they were equipped to maintain the services of an intern. We investigated the hospital quite thoroughly and found it well managed and controlled by a large group of the leading specialists in that line in this city. We recommended that they be granted the right to maintain an intern, which was accordingly granted.

We inquired into the procedure of an alleged Dr. Murphy, who had been convicted of bootlegging and kindred offenses against the law, to ascertain if he was the Dr. Murphy reported to be associated with one of the private homes established in the city. We found that he was a different person, and not a regular physician, and reported accordingly on June 19.

We went out a few miles on the east side of Portland, Aug. 28, to inspect an institution situated at Foster and Spring Road, called the Bellevue Sanitarium, and found a place of several acres, upon which was an up-to-date building with surroundings of orchards, gardens, chickens, ducks, cows and horses. Dr. Back was in charge and related that he had come from New York and was organizing an ethical hospital which would be put in charge of the regular medical profession. We reported such information as we had to the Council. .

We inspected the Good Samaritan Hospital, located at 23d and Lovejoy Streets, Oct. 7, to learn the arrangements which had been made to conduct a system of seven interns. We found they had been carrying interns for many years, but were now earnestly arranging to conduct every feature connected therewith in the most modern style and had established the plans and regulations to accomplish the same. The organization is excellent and the recommendation was sent to headquarters that they were well prepared to proceed with the thoro plan of action.

It will be observed that all these investigations have been in or near the city of Portland. This is because all the petitions to the Council of the American Medical Association came from this locality and all the requests from the Council were concerning matters also existing in this city, which accounts for the limitation of the work done by the committee of three. We have been prepared to meet requirements in other portions of the state but no calls have been made upon us.

Our work has been limited to requests from the Council of the American Medical Association and usually in response to applications made from the hospitals or sanitariums concerned.

(Signed) W. T. Williamson,
G. E. Houck,
T. J. Higgins,
Committee on Hospital Standardization.

On motion the report of this committee was accepted and ordered placed on file.

The report of the Medical Defense Committee, Dr. Paul Rockey, chairman, was delayed and postponed until the next sitting.

Dr. C. J. Smith moved, on behalf of Dr. E. F. Tucker, that the Committee on Cancer Research be increased by the addition of seven more members.

On motion, duly carried, the House of Delegates adjourned to sit at 5:00 p. m. today.

OCTOBER 26, 5 P.M.

The House of Delegates met pursuant to adjournment. Meeting called to order by the President, Dr. C. J. McCusker.

Roll call showed the following present: Drs. C. J. McCusker, E. B. McDaniel, J. M. McGavin, C. J. Smith, Paul Rockey, A. W. Baird, M. B. Marcellus, R. E. Watkins, S. M. Strohecker, W. S. Knox, G. F. Koehler, A. C. Smith, C. T. Chamberlain, W. Johnston, F. A. Kiehle, R. L. Booth, A. L. Houseworth, E. B. Pickle, Bertha Stuart, A. H. Ross, C. J. Clements, and Southworth.

Motion was made and carried that Dr. E. B. Pickle of Medford, be appointed to represent Southern Oregon Medical Society as delegate.

The report of the Medical Defense Committee was read by the chairman, Dr. Paul Rockey, and the same, on motion, was accepted and ordered placed on file.

REPORT OF MEDICAL DEFENSE COMMITTEE

To the House of Delegates:

Your committee has met with the Council, and reported to it at all its meetings. It has met between Council meetings, and acted for the Council in accordance with its recognized policies, reporting such activities and actions at the next meeting.

The office of the Secretary informs us that the amount of the Defense Fund now on hand is $5,415.70, and that between the annual meeting of this Association in June, 1921, and the present date, there has been expended from the Defense Fund, $683.19.

The office of the Association's Advisory Counsel informs us that they have considered twenty-eight claims during the period of this report, in addition to some claims and questions informally considered and advised on. Of these twenty-eight claims, four were dropped by the claimants, two were settled without suit, eleven are pending as threatened suits, and eleven were suits.

Of the eleven suits just mentioned, two have been dropped by the claimants, and six have come to trial. Of these six cases that came to trial, five terminated successfully for the defendant. One case is pending on appeal, but it antedates the period of this report, and the Association has not been represented in it. Three suits are still pending for trial.

Your committee desires to express its gratitude to the Advisory Counsel, Charles H. Carey, and to the attorneys of his office who have also advised and aided the Association in this work, Mr. Robert B. Kuykendahl, Mr. Chas. A. Hart, and Mr. Omar C. Spencer. Your committee also desires to express its gratitude to Mr. F. S. Senn for his kindly cooperation with the office of the Advisory Counsel.

We are confident that, if every member of this Association knew particularly of malpractice suits as your committee has known of them, there would be a general understanding of the importance of this subject, and complete co-operation with, and support of the work of this committee of the Council. From lack of sufficient knowledge on the part of the membership of the Association, we observe less understanding and interest than is desirable and, therefore, less protection and value of this work to this Association and our profession.

Many of the claims considered by your committee and by the office of the Advisory Counsel, come to attention in round-about and informal manner, rather than formally and promptly by report of the threatened member. Whether the threatened member is protected by any malpractice defense insurance or not, this defense of the Association is at his service.

It must be the policy of your committee to discourage settlement and to approve of it only in unusual cases. It should be stated that the two cases mentioned above, which were settled without suit, were both settled without the approval of the Association. The most important single thing that we can urge on every member of this Association is that, if he should be threatened with a malpractice suit, he should immediately write to the Secretary.

In some of the suits defended the result was not only protection for the individual member who was sued, but protection for other members now and in the future, because of decisions on legal questions involved. Every threatened malpractice suit successfully defended tends to discourage the threatening or bringing of such suits. Every threatened malpractice suit unsuccessfully defended tends to encourage the threatening and bringing of such suits. The committee always has in mind not only the defense of the threatened individual member but the protection of all the members.

The American Medical Association, recognizing the importance of malpractice defense, has established a Medico-Legal Department to co-operate with such departments of the various State Associations.

Your committee incorporated in its report its last letter, sent since the last annual meeting, which follows:

"From : The Medico-Legal Defense Committee.
To : The Secretaries of Component Societies.
Subject : Medico-Legal Defense.

1. Attention is invited to the following substance of a letter, sent by this Committee to each member of the State Medical Association on September 1, 1920.

At the Annual Meeting in 1917 the House of Delegates amended the constitution "so as to maintain a plan of mutual or co-operative defense of its members from malpractice suits."

Section V. The Council shall constitute the Committee, and shall render all possible aid to the threatened member. In accordance with the following rules, it is available for any member of the Association in good standing, who may be threatened by a suit of malpractice.

1. The threatened member must himself have been in good standing at the time the services were rendered.

2. A member in good standing is one who has

paid his dues on or before the first day of the annual meeting of that year of the State Association.

3. If a member was in good standing when services were rendered, and should he resign from the State Association, or move to another state, this Association will defend him in case of malpractice, where alleged malpractice has been committed while the member was in good standing in the Association, and he left this Association in good standing.

4. The Defense fund of the Oregon State Medical Association is for defense only.

5. The Defense fund of the Oregon State Medical Association is not for the payment of judgments.

6. This fund is for the defense of malpractice, where no malpractice has been committed.

7. In case of threatened malpractice suit, notify the Secretary of Oregon State Medical Association. He will notify you to meet with the Council of the State Association, or to communicate with it. You should be prepared to submit to the Council all data and records relative to the case.

8. The Council will agree with the accused in selecting from the profession witnesses who are best qualified to turnish expert medical testimony. Medical expert testimony in courts by physicians must be standard in itself, and impartially submitted to the court.

9. The State Medical Association Defense Fund will pay the expenses of expert medical witnesses to any part of the state where malpractice suit is brought, also attorneys' fees.

10. The Council of the Oregon State Medical Association has appointed Hon. Charles H. Carey as Advisory Counsel. It is the intent of the Council to employ other attorneys, where suits are brought in distant parts of the state, the selection of such attorney to be by the Council and the member being sued for malpractice.

11. The Council of the Oregon State Medical Association will not be responsible for expenses incurred without its authority.

SUGGESTIONS

It is most advisable that members keep complete records of every case treated, medical or surgical, as every case treated is a prospective malpractice suit. Have X-rays of all fractured or supposed fractures before and after reduction.

Any physicians' liability insurance company, unless it is authorized to do business in the state of Oregon, affords uncertain protection. If you already have liability insurance, it would be wiser to write to the State Insurance Commissioner, and ask him if the company you are insured in has been authorized to do business in this state; if not, you should insure in one that is so authorized, because you would be without certain protection in an unauthorized company.

2. It is urged that the above subject matter be brought to the attention of all members, and particularly that any member who is sued communicate promptly with the Secretary of the State Association.

We express our regret at losing from membership of this Committee Dr. George S. Whiteside, on the occasion of his removing from the state.

(Signed) Paul Rockey, Chairman
Roy C. McDaniel,
Alvin W. Baird.

On motion duly made and carried the Kolynos Tooth Paste Company was permitted to establish a booth in the corridor and give out samples of tooth paste.

Report of the special committee appointed this morning was called upon for its report, and thereupon the following report was read by the chairman, Dr. C. J. Smith:

"Report of Special Committee appointed by the President on October 26, 1922, at 8:00 a. m. session, begs to report as follows:

Committee met and adopted the following resolutions:

WHEREAS, The Oregon State Medical Association, having been in existence for more than fifty years, and

WHEREAS, this Association has performed very distinguished service for the medical profession and the people of the State of Oregon, and

WHEREAS, Conditions have become so changed, owing to the change in social and other economic conditions, that it is necessary to make some very definite changes in the conduct and functions of the Oregon State Medical Association, and

WHEREAS, We believe that this Association could be made to function and serve the profession to much better advantage if it employed an Executive Secretary, and conduct its affairs in a businesslike way and in keeping with the present times and economic and social conditions, and

WHEREAS, We believe that such a Secretary would cost the Association not less than three thousand six hundred ($3,600) dollars per year, that the office would cost not less than nine hundred ($900) dollars per year, telephone and telegraph service two hundred and forty ($240) dollars, and postage and printing two hundred and forty ($240) dollars, stenographic services nine hundred ($900) dollars per year, traveling expenses six hundred ($600) dollars per year, Northwest Medicine seven hundred ($700) dollars per year, Defense Fund twenty-one hundred ($2,100) dollars per year, incidentals amounting to about twenty-seven hundred and twenty ($2,720) dollars) per year; making a total of twelve thousand ($12,000) dollars per year, based on a membership of seven hundred. Considering such losses as we may possibly suffer from loss in membership, we feel that it is necessary at this time to provide for raising the dues of the membership in the Oregon State Medical Association, which shall cover Northwest Medicine, Defense Fund, League for the Conservation of Public Health, and in fact all of the activities of the Association, to twenty ($20) dollars per year, or five ($5.00) dollars per quarter, and that this fund should be collected by the Executive Secretary and paid out under the direction of the Board of Councilors of the Oregon State Medical Association.

BE IT RESOLVED, That the House of Delegates, now in session, hereby declare an emergency to exist, and that the Board of Councilors of this Association be directed to proceed as soon as possible to bring into effect this resolution.

(Signed) C. J. SMITH,
H. J. CLEMENTS,
P. J. BARTLE,
C. J. MCCUSKER,
E. B. MCDANIEL.

The said Special Committee also presented the following:

Article IX of the Constitution of the Oregon State Medical Association should be amended to read as follows:

"Funds for meeting the expenses of the Association shall be arranged for by the House of Delegates by an equal per capita assessment not to exceed $20.00 per capita per annum upon each county and district society, to be fixed by the House of Delegates; by voluntary contribution and from the profits of its publications. Funds may be appropriated by the House of Delegates to defray the expenses of the annual sessions, for publication and for such other purposes as will promote the welfare of the Association and profession."

Chapter VIII, Section 3, of the By-Laws of the Oregon State Medical Association shall be amended to read as follows:

"The Committee on Public Policy and Legislation which consists of six members and the President and President-elect, and Secretary of this Association, and the members other than the ex-officio, shall be appointed for a period of three years, provided that at the first election of these members, two shall be appointed for one year, two for two years, and two for three years; thereafter, two members to be appointed each year. And this committee when tnus appointed shall constitute the committee known as "The League for the Conservation of Public Health.' Under the direction of the House of Delegates it shall represent the Association in securing and enforcing legislation in the interest of the public health and scientific medicine. It shall keep in touch with professional and public opinion, shall endeavor to shape legislation so as to secure the best results for the whole people, and shall utilize every organized influence of the profession to promote the general influence in local, state and national affairs and elections. Its work shall be done with the dignity becoming a great profession, and with that wisdom which will make effective its power and inflence. It shall have authority to be heard before the entire Association upon questions of great concern, at such time as may be arranged during the annual session."

Motion to adopt the resolution and report af the Special Committee was made and seconded, and after extended discussion, the motion was put and upon vote the same was duly adopted.

Motion was made and carried that the House of Delegates adjourn to meet again at 8:15 a. m. Friday, October 27, 1922.

SECOND SESSION OCTOBER 27, 8:30 A. M.

The House of Delegates met pursuant to adjournment. Meeting called to order by the President, Dr. C. J. McCusker.

Roll call showed the following present: Drs. C. J. McCusker, E. B. McDaniels, J. M. McGavin, C. J. Smith, A. W. Baird, M. B. Marcellus, R. E. Watkins, S. M. Strohecker, G. F. Koehler, A. C. Smith, C. C. Moore, R. B. Dillehunt, Joyce, J. M. Short, C. T. Chamberlain, Wilson Johnston, F. A. Kiehle, R. L. Benson, A. L. Houseworth, L. H. Vehrs, J. H. Robnett, E. R. Gullion, E. B. Pickle, E. F. Tucker, Bertha Stuart, Ross, E. J. Clements, Southworth, H. G. Mount.

Minutes of previous meetings read and approved.

Dr. C. J. Smith reported further for the Special Committe, recommending combination of the offices of secretary and treasurer. On motion duly made this was carried.

Thereupon the House of Delegates resolved itself into a committee of nominations.

Dr. Houseworth, now a resident of California, offered his resignation as President-elect. It was moved that his resignation be reluctantly accepted, with regret for his departure from Oregon.

Nominations were declared in order for President:

Dr. P. J. Bartle, of Eugene, was duly elected.

Thereafter other nominations were made and resulted as follows:

President-elect, Dr. E. B. McDaniel, of Portland.

First Vice-President, Drs. H. J. Clement, of Salem, and Quenton Tucker, of Forest Grove.

Second Vice-President, Drs. A. H. Johnson of Arlington, and L. B. Bouvy, of La Grande.

Third Vice-President, Drs. E. B. Pickle, of Medford, and A. H. Ross, of Eugene.

Treasurer, Drs. S. M. Strohecker, of Portland, and Bertha Stuart, of Eugene.

Secretary, Drs. W. L. Bishop and J. Earl Else, of Portland.

Councilors for five years,Drs. C. J. Smith, Paul Rockey, A. C. Smith, F. A. Kiehle, W. Johnston, all of Portland.

Dr. William Kuykendall, of Eugene, was nominated to fill the vacancy of Dr. Philip J. Bartle, who was made president-elect. Dr. S. M. Strohecker was nominated to fill the vacancy of Dr. A. L. Houseworth, who has left the state. Dr. C. L. Booth was nominated to fill the vacancy of Dr. G. S. Whiteside, who has left the state.

The Secretary was instructed to cast the unanimous vote of the house for these men to fill these vacancies, and they were each respectively declared elected.

Delegate to the A. M. A., Dr. J. A. Pettit, of Portland.

Alternate Delegate, Dr. C. J. McCusker, of Portland.

The Secretary was instructed to cast the unanimous ballot, and they were declared elected.

There being no further business to come before the House this year, upon motion duly made and seconded, the House adjourned to go immediately into the General Session.

T. Homer Coffen, Secretary.

GENERAL SESSION, OCTOBER 27, 10 A. M.

The meeting was called to order by the President, Dr. C. J. McCusker. This meeting followed immediately upon the adjournment of the House of Delegates.

Mr. Tebbetts, of the Better Business Bureau, was introduced by the President, and spoke for a few minutes on the relations of the Better Business Bureau to the medical profession. Discussion followed and it was suggested that this Association take out membership in the Bureau. Upon motion duly carried this matter was referred to the Board of Censors.

President then declared that election was the next order of business.

ELECTION OF OFFICERS

The following officers were elected for the ensuing year:

President-elect, Dr. R. B. McDahiel, of Portland.

First Vice-President, Dr. H. J. Clements, of Salem.

Second Vice-President, Dr. Lee B. Bouvy, of La Grande.

Third Vice-President, Dr. E. B. Pickel, of Medford.

Treasurer, Dr. S. M. Strohecker, of Portland.

Secretary, Dr. W. L. Bishop, of Portland.

Councilors for five years: Dr. C. J. Smith and Dr. Paul Rockey.

The resolutions of the committee appointed by the House of Delegates was read to the General Session, and was followed by general discussion.

Dr. Smith, editor of Northwest Medicine, stated that in Seattle the dues amounted to $50.00 for members of the State Association who also belonged to the Medical Defense Fund and supported the Public Health League.

Dr. C. J. Smith of the committee explained that this whole matter was one for the Council and would be handled by it. On motion of Dr. Williamson, duly seconded, the resolutions were adopted. There being no further business the scientific session was resumed.

T. Homer Coffen, Secretary.

UTAH STATE MEDICAL ASSOCIATION

REPORT OF THE TRANSACTIONS OF THE TWENTY-EIGHTH ANNUAL MEETING OF UTAH STATE MEDICAL ASSOCIATION

(Concluded)

Report of the Committee on Necrology

Since the last meeting of this Association we have mourned the loss of three of our esteemed members. Their passing away has left us with feelings of regret and sorrow, and in the communities where they lived and practiced their loss is mourned with sorrow and heartaches. Their families have indeed sustained a sad bereavement.

ROBERT STEPHEN JOYCE

Dr. Joyce died at the Thomas D. Dee Memorial Hospital, Ogden, Utah, on Tuesday evening, Feb. 21, 1922, after a short illness of only eight days. The immediate cause of death was septicemia, following a streptococcic sore throat. He was born at Appleton, Wis., in 1867. After completing the work of the public schools of his home town, he entered the University of Wisconsin at Madison, where he graduated with honors. His medical education was obtained at Rush Medical College, where he graduated in 1891. Shortly after graduation, he moved to Ogden, Utah, and started to practice his profession in that city, where he attained eminent success in his chosen career. He specialized in surgery and was considered one of the foremost surgeons in the Intermountain country.

During his lifetime he held many positions of trust and at the time of his death was Division Surgeon at Ogden, Utah, for the following railroads: Southern Pacific, Union Pacific, Oregon Short Line, Denver & Rio Grande Western, Utah-Idaho Central and Utah Rapid Transit Company. Beside his many professional activities, Dr. Joyce was active in civic and educational affairs. He was a member of the Weber Club, a charter member and first Exalted Ruler of the Ogden Lodge, B.P.O., Elks, also a member of the Masonic Order. He served his home city as a member of the Board of Education for ten years.

He was a member of the Weber County Medical Society, and he served the State Association as its president with honor and distinction during the year 1914-1915. A number of years ago he was admitted as a Fellow to the American College of Surgeons.

Funeral services were held Friday morning, Feb. 24, at Ogden, after which his remains were shipped to Seattle, Wash., for cremation.

RESOLUTIONS

WHEREAS: The Great Power of the Universe has deemed it wise to remove from this earth our worthy and esteemed fellow-physician, Dr. Robert S. Joyce, and

WHEREAS: The position which Dr. Joyce held as a former president of this association would make it fitting that we honor his name and show our respect and appreciation for the work he did as a physician of this State, and

WHEREAS: His life's work was characterized by unselfish devotion and kindly sympathy to suffering humanity, and in his passing this Society sustains a distinct loss of a trustworthy, conscientious, and efficient associate, and his community has sustained the loss of a distinguished citizen and true friend.

THEREFORE BE IT RESOLVED: That we record our sincere sympathy, sorrow and regret at the loss of such a capable surgeon after a life so replete with fine deeds and so full of assistance to his community, and

FURTHER, BE IT RESOLVED: That to the family and friends we extend our sincere sympathy in the time of their sad bereavement for their loved one, and that a copy of these resolutions be spread upon the minutes of the Utah State Medical Association and a copy of the same be sent to the immediate family.

GEORGE E. HYDE

Dr. Hyde, the superintendent of the State Mental Hospital at Provo, Utah, died on June 22, 1922, at Salt Lake City, following an operation for appendicitis. Accompanied by his wife, Dr. Hyde went east about June 1, and while at Worcester, Mass., he felt indisposed and decided to seek medical advice at Buffalo, N.Y. By the time he arrived at Buffalo he felt improved and decided to return home. While on the train he became very seriously ill and upon arrival at Salt Lake City he went immediately to a local hospital, where he was operated upon, but surgical intercurrence proved to be too late.

Manchester, England, was the birthplace of Dr. Hyde fifty-eight years ago. He came to this country when but seventeen years old and first settled at Ogden. For more than ten years he was private secretary to the superintendent of the Z.C.M.I., at Ogden, and, while living in that city, in November, 1886, he was married to Miss Rosabell Farr. He graduated in medicine from the University of California, in 1895. Following his graduation he went to Rexburg, Ida., where he was actively engaged in the practice of medicine for thirteen years. While a resident of that state he was president of the State Board of Health for two years and from 1912 to 1914 was superintendent of the Idaho State Mental Hospital. Following a postgraduate course at Harvard University, he was appointed superintendent of the State Mental Hospital at Provo, in September, 1916, in which position he served until his death. While there he brought about many important improvements, the most important of which was the construction of the new, modern hospital building, which is to be named in his honor.

At the time of his death Dr. Hyde was a member of the Utah County Medical Society; American Medico-Psychological Association; and was serving the Utah State Medical Association as its second vice-president.

RESOLUTIONS

WHEREAS: It has pleased God to remove from our midst our worthy member, Dr. George E. Hyde, and

WHEREAS: It is fitting that we show our respect and appreciation for his work as Second Vice-President of this Association and as Superintendent of the State Mental Hospital,

THEREFORE, BE IT RESOLVED: That the loss of such a capable physician and public servant be recorded with our sincere sorrow and regret, and

FURTHER, BE IT RESOLVED: That to the family and friends we extend our sincere sympathy in this their time of bereavement for their loved one, and

FURTHER, BE IT RESOLVED: That these resolutions be spread upon the minutes of the Utah State Medical Association and a copy of the same be sent to the immediate family.

STEPHEN LONGSTROTH RICHARDS

Dr. Richards, senior member of the firm of Drs. Richards, Irvine, Ridges, Snow and Tyree, died at 12.45 o'clock on July 5, 1922, at the family home after a lingering illness of about a year, but until very recently he had remained active in the practice of his profession.

He was born at Salt Lake City, July 29, 1853, the son of Willard Richards and Nannie Longstroth. His boyhood home was in Farmington, where he lived until after his marriage to Miss Emma Louise Stayner. In 1875 he was called on a mission for the Mormon Church to England, and upon his return he attended medical school and was graduated from Ensworth Medical College of St. Louis, in 1893. Immediately after graduation he returned to his home in this city, where he has been engaged in the practice of medicine since. Prior to 1904 he was a member of the surgical staff at the Holy Cross Hospital, but with the opening of the W. H. Groves L. D. S. Hospital he became a member of the surgical staff of that institution and held his position since that time.

Dr. Richards was one of our most beloved physicians. He was especially interested in and extended many kindly courtesies to the young man who is just beginning his career. In the early days of medicine in this territory and state, Dr. Richards with his associates was considered among the foremost in his profession. His son, Dr. Gill Richards, was associated with him many years prior to his death and succeeded to a large part of his practice with the organization of his firm.

In addition to his wife, Dr. Richards is survived by the following sons and daughter, all of whom live in this city: Apostle Stephen L. Richards of the L.D.S. Church, Claude Richards, Dr. G. Gill Richards, Stayner, Willard and Russell Richards, and Mrs. Homer C. Warner.

Funeral services were held in the Richards Ward Chapel on July 7, following which interment was in the family plot in the City Cemetery.

RESOLUTIONS

WHEREAS: Almighty God, in His infinite wisdom and providence, has seen fit to call to eternal rest our esteemed and beloved associate, Dr. Stephen L. Richards, and

WHEREAS: Unselfish and kindly sympathy on behalf of suffering humanity characterized his life-work in this community, and

WHEREAS: His passing to the realms beyond has removed from the ranks of the Association a true disciple of Hippocrates, a trust-worthy and conscientious associate, and this community has sustained the loss of a distinguished citizen and a true friend, beloved alike by all with whom he came in contact,

THEREFORE, BE IT RESOLVED: That the Utah State Medical Association extend heartfelt sympathy to his family in this hour of bereavement, and

FURTHER, BE IT RESOLVED: That a copy

of these resolutions of condolence be forwarded to the family as an expression of our sincere sympathy, and also that a copy be spread upon the minutes of this association.

Committee:
B. W. Black, Chairman
M. M. Critchlow

Health and Public Instruction

Your committee met a number of times with a like committee from the State Teachers' Association, and together we went over the problems confronting them in getting this work under way. We found that certain men doing specialty work in Salt Lake City had been doing a wholesale work in removing tonsils in some of the rural counties, and that they had had the cooperation of teachers in getting the school children operated on. It had resulted in much dissatisfaction, as many people thought that the work was being done under the direction of the state schools.

We were able to interest the members of the State Ophthalmological Society in this work and a meeting was held with them in the Hotel Utah, at which they volunteered their help in taking care of the operative work in any of the outlying counties, where there were no men doing nose and throat operative work. Necessary charity work would be done and other work would be charged for as anywhere else, the men going out in turn as they were called.

Nothing has been done during the summer except the appointment of Dr. L. W. Snow as representative of the State Ophthalmological Society to cooperate in this work. We hope to be able to start work with the beginning of school this fall.

Jos. R. Morrell,
Chairman.

Committee on Industrial Medicine

Mr. President and the
House of Delegates:

I wish to submit a brief report of the work done by the Committee on Industrial Medicine. The members, besides myself, now are (since the resignation of Dr. Calderwood) Drs. Calonge and Tyree. The chief work of this committee is to advise as to the extent of disability and the amount of compensation claims, also as to the proper and just fees to be charged for service by the doctors. These meetings take place every other Friday afternoon at 4.30 p.m. often lasting until 8 p.m.

We have received some criticism from physicians, but if these few will ever accept the privilege of spending a few hours with us they will see how fair we try to be before we make a decision. Some have come and these have not failed to compliment us as a committee. Of the Industrial Committee as judges, I cannot speak too highly in their praise. Their effort is to be absolutely fair, of course, and like us they must stand by the rules as prescribed by law. There are several phases of these industrial laws that need revising but this must be taken up with the next legislature.

There has been a determined effort to have the governor appoint a salaried physician to take the place of this committee. This we strongly wish to protest against as we feel that the best interests of the doctors would soon be forgotten. We would suggest that a small pecuniary reward be paid by the State Association to members of this committee who willing give up so many hours to this work. I would also suggest that Dr. Calonge, who is now the oldest member, be appointed chairman and an extra member be added to the committee in my place, so that ultimately all members of the society will have served on the committee.

C. L. Shields.

The following report from Dr. Calonge to Dr. Shields was also read:

Salt Lake City, Utah, Aug. 28, 1922

Dr. C. L. Shields,
Chairman of State Committee on
Industrial Medicine and Surgery.

Dear Doctor: I wish to report that I have made a careful investigation of the subjects discussed at out recent meeting, and the information here given has been obtained from reliable persons representing:

First: Employers who carry insurance upon their employees and who informed me that certain insurance companies are moving to have the present schedule of medical fees reduced and will probably ask for a hearing on the subject in the near future and that these insurance companies have endeavored to enlist the support of the employers in this matter by promising a reduction in their rates if they succeed in cutting the fee schedule.

Second: The insurance companies are also bringing up the question of their privilege of designating certain physicians to attend to the work of their company exclusively.

Third: From employees in certain insurance offices I secured the information that some doctors of Salt Lake City have agreed to do this work under the reduced rates if the change was made.

Fourth: From responsible men in both principal political parties I have learned that there is a move on foot to make the Industrial Commission a one-man commission and the commissioner to be an attorney appointed by the party in power. Also, that the Medical Advisory Committee is to be a one-man committee selected by political appointment and paid a yearly salary.

These changes in the law are being promulgated under the guise of economy to the state and I was more than surprised to learn that employers and politicians had been given the impression that the present Medical Committee of Three received a salary for their services.

These matters are being very quietly handled and, unless medical profession awakes to these facts before the next election, we will find the entire industrial medical question and the fixing of our fees and designation of favored physicians in the hands of a few politicians and all the past efforts of the medical profession to get industrial medicine and surgery upon a sound and professional basis will have come to naught.

I feel that this matter is of such vital importance to the medical men of Utah that I hope you will bring it to the attention of the entire association at the coming meeting.

Very truly yours,

S. D. Calonge.

Report of the Scientific Committee

Members of the House of Delegates,

Gentlemen: As chairman of the Scientific Committee I desire to make the following report of the year's work.

After the Council, representing this body, had made their selection of date for the meeting of the Utah State Medical Society, your committee received the program of the Tristate meeting which was to be held in the Northwest in July. We received permission from the Council to change the date of our program from August and September to July, provided we could secure enough of the men going to the Tristate meeting to make our effort worth while. To this end they authorized an expenditure of money sufficent to send telegrams to all of the gentlemen concerned.

This was done with the resultt hat we received favorable replies from only three of these men. Since this was not enough to insure a substantial program, the Council authorized this committee to proceed and secure enough of these men for a special meeting in June. This was done with the resultt hat we secured, as you know, the extraordinary services of Dr. Joseph C. Bloodgood of Baltimore, Dr. Adson of the Mayo Clinic, Dr. William Englebach of St. Louis and Dr. Robert Millwee of Dallas, Tex.

Dr. Bloodgood's visit was made possible by the Salt Lake County Medical Society defraying his expenses in coming to this city.

For our regular meeting we secured the men, as you now see, listed on our program. We believe that we will have as instructive a program as that of the special meeting in June.

In view of the fact that in the past it has been the custom of the incoming president to appoint two members of the Scientific Committee to work in conjunction with the secretary, and inas much as these men are not always familiar with the work to be done until late in the season, thereby throwing a great burden of work on the secretary, we wish to recommend that in the future three men shall be appointed on this committee to work with the secretary in arranging the details of the program and that one of the three members shall be a member who was on the Scientific Program the preceding year. We believe this will make for a better committee and lighten the burden of the secretary.

Respectfully submitted,

George F. Roberts,
Chairman.

Dr. Behle, the President, appointed Dr. T. C. Gibson, Salt Lake City, Dr. L. S. Merrill of Ogden, and Dr. Joseph Hughes of Spanish Fork as a Reference Committee and the reports were handed to them.

Miscellaneous Business

The matter of an increase in the dues to meet the additional expense of the California State Journal (should it be adopted as the Utah Journal) was discussed; also the matter of raising $1,000 to be used in legislative work, and it was suggested that the money raised by Dr. Brooks be used for this purpose, also that $2.00 be added to the dues, for the Journal and the Legislative Fund. Dr. Rich stated that Dr. Brooks had suggested that the fund be used for postgraduate work, but Dr. Sears thought Dr. Brooks would not object if the money were used for another purpose, as money could be raised next year for postgraduate work.

Moved by Dr. Raley, seconded and carried that the matter be tabled until after the Reference Committee had gone over the reports and made their report.

Moved by Dr. Roberts that the House of Delegates meet at 8 o'clock on Saturday morning, as there would be too much work to get thru at the noon meeting on Friday, the place of meeting to be decided at the Friday meeting. Seconded, and unanimously carried.

Meeting adjourned.

SECOND SESSION

Held at University of Utah, 12.30 p.m., Sept. 1.

Meeting called to order by the President, A. C. Behle.

Roll Call showed quorum present.

Dr. E. P. Oldham, of Logan, brought up the matter of his credentials as alternate from the Cache Valley Medical Society. The Secretary read a letter from the Cache Valley Medical Society naming E. S. Budge and G. W. States as delegates, and Dr. Worley and Dr. T. B. Budge as alternates, also the question was as to which alternate Dr. Oldham, who was appointed at a regular meeting of the C.V.M.S. held in December, 1921, or Dr. Worley who was appointed at a special meeting held in July, 1922, should be seated. Dr. Oldham claimed the purpose for holding the special meeting of the C.V.M.S. was not stated in the call for such meeting, which action was unlawful.

After a great deal of discussion pro and con, Dr. Joseph Hughes moved that Dr. Oldham be seated, seconded by Dr. Landenberger, and after more discussion the question was put, the motion passed and Dr. Oldham was seated as Alternate Delegate from Cache County.

(Drs. Worley, E. S. Budge and G. L. Rees of the Cache Valley Medical Society left the room, stating they did not care to serve with Dr. Oldham.)

Dr. T. C. Gibson, Chairman of the Reference Committee, made a partial report, bringing up the matter of the contemplated advance in the dues. A discussion ensued as to the amount necessary to be raised to do the work contemplated.

President Behle explained that in order to raise the dues to more than $5.00 the matter would have to be passed by the House of Delegates by a four-fifths majority, and that it was this item which caused the Committee to place the amount of dues at $5.00. Dr. H. P. Kirtley suggested that the dues should be $10.00 a year to cover everything.

Dr. Joseph Hughes moved that the Utah State Medical Association dues be made $7.00 a year instead of $4.00 as at present. Motion seconded.

Dr. J. U. Giesy moved an amendment to Dr. Hughes motion (in which Dr. Hughes concurred) that the state fees be raised to $8.00. Seconded by Dr. B. W. Black. A standing vote was taken and the motion passed unanimously with one exception. 22 votes for and one against.

Moved and seconded that the meeting adjourn until 8 a.m. Saturday, September 2, 1922. Meeting adjourned.

THIRD SESSION

Held at University of Utah, 8 a.m., Sept. 2

Meeting called to order by the president, A. C. Behle.

Roll call showed quorum present.

Minutes of previous meeting (noon, Friday, Sept. 1) read, corrected and approved.

Dr. H. B. Felts not being present, upon motion of Dr. T. C. Gibson, seconded by L. J. Paul, and unanimously carried, Spencer Wright was seated as a member of the House of Delegates in Dr. Felts' place.

Dr. D. L. Barnard not being present, it was moved by Doctor Hammond, seconded and unanimously carried, that Dr. F. L. Peterson, one of the alternates, be seated in Dr. Barnard's place.

President Behle announced the first order of business was the annual election; that a president, first vice-president, second vice-president, third vice-president, treasurer and councillor for the Third District (3-year term), were to be elected.

The following officers were then duly elected to serve for the year 1922-1923:

President, J. C. Landenberger, Salt Lake City; first vice-president, J. R. Morrell, Ogden; second vice-president, G. F. Roberts, Salt Lake City; third vice-president, Joseph Hughes, Spanish Forks; treasurer, F. L. Peterson, Salt Lake City; councillor Third District (3-year term), E. S. Hughes, Provo; delegate to A.M.A. (2-year term), E. M. Neher, Salt Lake City; alternate delegate to A.M.A. (2-year term), A. C. Behle, Salt Lake City.

In addition to the above the officers for the ensuing year include: Secretary, W. L. Rich, Salt Lake City; councillors, First Distrist, G. L. Rees, Smithfield; Second District, R. B. Hampton, Salt Lake City.

Report of the Reference Committee

Dr. T. C. Gibson, Chairman of the Reference Committee made the following report:

Gentlemen: Your Committe submit the following recommendations:

That the Secretary's report be adopted as read.

That the report of the Chairman of the Council be adopted with the omission of individual names.

That the report of the Committee on Public Policy and Legislation be adopted, and, in order to meet the increased expense of the Association, that the annual dues be raised to $5.00. (This part of the report read at the meeting held on Friday, September 1, and as already recorded, the dues raised to $8.00 to meet this expense.)

That the report of the delegate to the A.M.A. be adopted and that part dealing with increase in membership be called to the attention of the Council and constituent societies.

That the report of the Committee on Industrial Medicine be adopted and that each member of the Association serving in an advisory capacity to the Industrial Commission be paid by the Utah State Medical Association five dollars for each day of actual service, and that it be further recommended that the Committee on Public Policy and Legislation use every effort to defeat moves that are being made that are prejudicial to the interests of this Association.

That the report of the Committee on Public Instruction be adopted as read.

That the report of the Committee on Scientific Program be adopted as read.

That the suggestions made by our President, Dr. A. C. Behle, be adopted.

That the report of the Committee on Necrology be adopted as read.

That the report of the Treasurer be adopted as read.

T. C. Gibson,
L. S. Merrill,
Joseph Hughes,
Committee.

Moved by Dr. J. F. Critchlow that the action of the Reference Committee re the Secretary's report be adopted as read. Seconded by Dr. Raley and unanimously carried.

Moved by Dr. B. W. Black that the part of the report referring to the report of the Council be accepted.

Dr. G. L. Rees, of the Cache Valley Medical

Society, stated there were some phases of the controversy that the Council did not understand.

Dr. Hughes said they were willing that the report of the Council be gone into by the House of Delegates very carefully.

Dr. Joseph R. Morrell of Ogden moved that the Report of the Council be re-read. Not seconded.

Dr. L. J. Paul made a motion that the report in reference to the report of the Council be adopted after the report had ben re-read to the House of Delegates. Not seconded.

Dr. T. C. Gibson moved that the report of the Council be re-read. Seconded by Dr. Rees, and carried.

Report of the Council re-read by Dr. Hughes, Chairman of the Council.

Dr. Rees stated that the report was a personal biased report and he suggested that a committee of five be appointed to investigate things in Cache Valley and report next year.

The Cache Valley controversy was then discussed at considerable length, pro and con.

Dr. Homer E. Rich moved that, inasmuch as the matter involved the future policy of the Association, the adoption of the report be delayed until after the matter had been investigated by a committee. Seconded by Dr. Rees.

Dr. Gibson objected, saying he would like to see the report adopted.

Dr. Root: "I don't believe the House of Delegates has any right to take away the authority of the Council. If we recognize the Council as existing with authority, we must abide by its decisions."

Dr. Gibson: "The House of Delegates is to either reject or accept the report of the Reference Committee."

Dr. Homer E. Rich's motion was put and lost.

Moved by Dr. Joseph Hughes that the report of the Reference Committee, where it referred to the Report of the Council, be accepted as read, to-wit, "That the report of the Chairman of the Council be adopted with the omission of individual names." Seconded by Dr. Gibson, and unanimously adopted.

Moved by Dr. Raley, seconded by Dr. Black and unanimously adopted, that the report of the Reference Committee re Industrial Medicine be adopted.

Moved by Dr. Raley, seconded by Dr. Black, that the report of the Reference Committee referring to the report of the Committee on Public Policy and Legislation be accepted. Carried.

Moved by Dr. Sears, seconded by Dr. Giesy, that the report of the Reference Committee referring to the Public Instruction Committee's report be accepted as read. Carried.

Dr. Shields moved that the report of the Reference Committee referring to the report of the Scientific Program Committee be acepted. Seconded by Dr. Gibson, and carried.

Dr. Black moved, Dr. Sears seconded and it was unanimously adopted, that the recommendations of our President be accepted.

Moved by Dr. Roberts, seconded by Dr. Giesy that the report of the Reference Committee approving and accepting the report of the Committee on Necrology, be approved. Carried.

Moved by Dr. Raley, seconded by Dr. Critchlow, that the report of the Reference Committee relating to the report of the Treasurer, be accepted. Carried.

Dr. Jos. R. Morrell presented an amendment to Article 9, Section 1, of the Constitution, that the words "president-elect" be substituted for the word "president." No action was taken on this, as the Secretary explained that any amendments to the Constitution must be presented a year in advance of the time they are to be acted upon.

Dr. Wm. L. Rich suggested that the Association convey their appreciation in some substantial manner, to Dr. Harlow Brooks for his services to the Association and the $650 contributed to the Association through his efforts.

Moved by Dr. E. F. Root as follows:

RESOLVED

That the sum of money amounting to $650.00, which was collected from the postgraduate course given by Dr. Brooks, shall be known as the "Harlow Brooks Postgraduate Fund," to be used to promote postgraduate work in the future, and that a letter of appreciation be written Dr. Brooks, enclosing copy of this resolution.

Motion seconded by Dr. Giesy and unanimously carried.

Dr. Heber J. Sears presented the following resolution and moved its adoption:

RESOLUTION

That we endorse the good work the Utah Public Health Association is doing in the interests of public health education, as shown in the clean school contests it has conducted; the work of the Modern Health Crusade, and the public health nursing service it has financed through the state.

We congratulate the Association on having had funds with which to help finance the Traveling Health Clinic now touring the state, without which the valuable work it is accomplishing could not have been accomplished.

We express our appreciation of the stand taken by the Utah Public Health Journal in demanding high standards and ideals in the practice of medicine and pledge our support to said publication.

We favor steps being taken by our next legislature, looking to the further control of tuberculosis in our state, and for the proper care and treatment of those afflicted with this disease, that the health of the citizens of our state might be properly safeguarded.

Motion was seconded by Dr. T. C. Gibson and discussed. It was deemed unnecessary to put the question, as this work had already been endorsed in the report of the President, and the House of Delegates had approved his recommendation.

Letter from the A.M.A. was read, asking for the appointment of a committee to begin to collect funds for the establishment of a monument to be known as the Gorgas Memorial. Moved by Dr. Shields that the president appoint a committee. Seconded by Dr. Roberts and passed.

Dr. Roberts moved that the Program Committee consist of three members in addition to the secretary and the hold-over member as the work was too heavy for two members. Seconded by Dr. Shields and carried.

Salt Lake City was decided upon as the place of meeting for the 1923 session.

The President notified the Secretary to advise the component societies, thru their secretaries, of the advance in the dues from $4.00 to $8.00 a year.

Upon motion, duly made, seconded and carried, meeting adjourned.

Wm. L. Rich,
Secretary.

At the final session of the Utah State Medical Association Meeting, held Sept. 2, 1922, the following resolution was presented by Dr. Eugene Smith of Ogden, seconded by Dr. L. J. Paul of Salt Lake and unanimously adopted:

RESOLUTION

BE IT RESOLVED, that we acknowledge to the University of Utah the privilege extended to this Association in being permitted to hold our meetings in the University buildings. An especially are we grateful to the University Extension Department in aiding our Association in every way possible in making the meetings a success; also are we appreciative of the fact that an operator was furnished by the University to handle the lantern slides, pictures, etc.

AND BE IT FURTHER RESOLVED, that a copy of this resolution be spread upon the minutes and a copy be sent to the President of the University.

The following resolution, passed by the House of Delegates, was read to the Association:

RESOLUTION

That the sum of money, amounting to $650.00, which was collected from the Postgraduate course given by Dr. Brooks, shall be known as the "Harlow Brooks Postgraduate Fund" to be used to promote postgraduate work in the future, and that a letter of appreciation be written Dr. Brooks, enclosing copy of this resolution.

A hearty vote of thanks was given by the Association to Dr. Brooks.

Wm. L. Rich,
Secretary.

BOOK REVIEWS

Edited by Kenelm Winslow, M.D.

The Endocrine Glands and the Sympathetic System. By P. Lereboullet; P. Harvier; H. Carion and A. G. Guillaume. Translated by P. Raoul Mason, M.D., Instructor in Pediatrics, New York Post-Graduate Medical School, etc. With The Collaboration of Daniel R. Ayres, A.B., M.D., Assistant Professor of Gynecology, New York-Graduate Medical School. Cloth. 378 pp. J. B. Lippincott Co., Philadelphia and London, 1922.

Interest in endocrine disorders is at its zenith. the hormonic actions of the glands of internal secretion and the contradictory statements of would-be authorities are exasperating to the earnest student of the subject, so that he almost gives up the desire to keep abreast of the most recent progress in this branch of medicine in his despair at reconciling conflicting statements. The great desideratum is an accurate test as to the state of secretion of each of the endocrine glands, such as we have now only in the use of the metabolic test for thyroid activity. This lacking, a book which shall set forth conservatively and concisely the present state of accurate endocrine knowledge is most desirable. The trouble at present is that it is probably impossible to keep within an absolutely safe and sound preesntation of the subject without ignoring much that apparently has clinical value. However, the present volume seems to fill the bill as satisfactorily as any we have seen in being fairly complete and not transcending the limits of the proven.

It is rather surprising that the metabolic test is not mentioned in connection with hyperthyroidism and exophthalmic goiter, altho the symptomatology and diagnosis are carefully considered. The late sequel of vomiting, abdominal pain, pallor, cardiac disturbances and sudden death after diphtheria, often regarded as a neuritis of the vagus, etc., the author declares is unquestionably due to adrenal insufficiency which also occurs in typhoid and scarlet fever. The treatment, which may be life-saving, is described in detail. It is probable that adrenalin can be given frequently to advantage in many diseases with asthenia and low blood pressure, as in neurasthenia and tuberculosis.

Pituitary polyuria is not nearly so well presented in this book as by other authors, notably by Rowntree in Oxford Medicine, who regards all cases of diabetes insipidus as due to pituitary insufficiency. It appears as tho polyuria generally depended upon disturbance of the pituitary or neighboring parts. As noted in the beginning, the discussion of endocrine diseases is so different by different authors that it is hard to valuate their writings. Engelbach's description of pituitary disorders is infinitely more complicated and extensive but is not nearly so simple or understandable as that in this volume. The latter third of the work is on the pathology of the sympathetic system. One may conclude by saying that, while such works necessarily fail in being wholly practical, they are extremely suggestive and interesting. Winslow.

the hormomic actions of the glands of internal

Lessons in Pathological Histology. By Gustave Roussy and Ivan Bertrand of the Faculty of Paris. Translated from the second French edition by Joseph H. McFarland, M. D., Sc. D., Professor of Pathology and Bacteriology in the Medical Department in the University of Pennsylvania. Illustrated with 124 engravings. 278 pp., $3.25. Lea and Febiger, Philadelphia and New York, 1922.

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Eye Record No. 5.
Eye, Ear, Nose and throat, Record Nos. 4A-B-5 combination two sides)
Operative Record No. 6.
Pregnancy Record No. 7.
Labor Record No. 8.
Pregnancy and Labor Record, No. 7-8 combination.
Newborn Record No. 9.
Urine and Blood No. 10.
Sputum, Smears, Exudates, etc., No. 11.
Gastric Content, Feces, No. 12.
Progress Record No. 13.
Treatment Record, etc., No. 14.
Nurses Record, No. 15.
Nurses Record, No. 15A.
Graphic Chart No. 16.
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THE HOLLY PRESS, 215 Seneca Street, Seattle Main 1986 alternate. The left hand page contains concise descriptions of the pathologic lesion, while on the right hand page is a very beautiful engraving of the microscopic conditions. For a handy book on pathology this is one of the most useful that has been published.

Public Relief of Sickness. By Gerald Morgan. 195 pp., The Macmillan Company, New York, 1922.

The author first discusses the problems of sickness and poverty with their relationship to medical treatment. Then follow chapters on relief and medical treatment by the state as presented in Denmark, Germany and England. A chapter is devoted to reasons for the adoption of compulsory health insurance in America. One interested in the subject of state health insurance will find an abundance of material in this volume.

General Medicine. The Practical Medicine Series. Under General Editorial Charge of Charles L. Mix, A. M., M. D. The Year Book Publishing Company, Chicago, 1922.

This volume contains a general review of the recent progress in all branches of medicine. The four parts, respectively, deal with infectious diseases, diseases of the chest, of the blood and blood making organs and of the gastrointestinal tract. The latest advances in all of these subjects are herein presented. In brief compass this volume contains a wealth of valuable information.

Tuberculosis and the Community. By John B. Hawes, 2nd., M.D. Director, Clinic for Pulmonary Diseases and Assisting Physician, Massachusetts General Hospital, etc. 168 pp., $1.75. Lea and Febiger, Philadelphia and New York, 1922.

This volume treats of a very useful aspect of the tuberculosis problem. It does not present the subject of treatment but discusses the relation between tuberculosis and the general public. There are chapters on the transmission, frequency and the causes of tuberculosis. Others deal with sanatoria and dispensaries. Tuberculosis in its relation to housing and occupation is also considered. An indication of its cost is presented in the statement that six hundred sanatoria and hospitals cost $20,000,000 during the year 1920. For a knowledge of tuberculosis in its many aspects one should consult this book.

Modern Methods in the Diagnosis and Treatment of Renal Diseases. By Hugh MacLean, M. D., D. Sc. Professor of Medicine, University of London, etc., 102 pp., $2. Lea and Febiger, Philadelphia and New York, 1922.

This English monograph presents some of the newer methods employed in investigating the renal function. It is intended principally for the general practitioner and confines its description of tests to those which have been found of practical clinical value and which are easily carried out. After chapters discussing functions and diseases of the kidney with the significance of albuminuria and casts, the various modern methods of examination and tests are discussed in brief and exact phraseology. The last chapter is on the dietetic treatment of nephritis.

Lectures on Dietetics. By Max Einhorn, M. D., Emeritus Professor of Medicine at the New York Post Graduate Medical School and Hospital; Visiting Physician to the Lenox Hill Hospital, New York. 12 mo of 244 pages. Philadelphia and London, W. B. Saunders Company, 1922. Cloth, $2.25 net.

The position of the author in the field of gastrointestinal diseases is a guarantee of the value of this volume. The general subjects of diet, nutrition and foods are first considered. Chapters follow on the diet in individual diseases, particularly with reference to morbid conditions of the digestive tract. The chapter on rectal and duodenal alimentation particularly reflect the teachings of the author. It is a book well worth reading.

An Outline of the Pirquet System of Nutrition. By Dr. Clements Pirquet, Professor of Pediatrics at the University of Vienna, Austria. 16 mo. of 96 pages. Philadelphia and London, W. B. Saunders Company, 1922. Cloth, $2.00 net.

This little volume details the author's system of feeding diets. His feeding formulae center about the "nem", composed of the initials of "Nutrition Equivalent Milk." It is a nutritive combustible value of one gram of average human milk. He discards the term callory in favor of this new designation. He discusses nutrition in connection with tuberclosis, and feeding as preventative medicine.

The Healthy Baby. The Care and Feeding of Infants in Sickness and Health. By Roger H. Dennett, B. S., M. D. Professor of Diseases of Children and Director of the Department of the New York Postgraduate Medical School, etc. Second edition revised, 247 pp. The Macmillan Company, New York, 1922.

This is a useful book for the average mother, giving a description of ordinary every-day things she has to do for the baby. It does not deal extensively with diseases or treatment. It discusses such matters as sleep, crying, the bath, bed wetting, croup, worms and many other simple, common ailments. There are suggestions as to care of teeth, eyes, ears, genital organs and the like. The mother will be spared many anxious moments if she has access to a book of this character.

Ophthalmoscopy, Retinoscopy and Refraction. By W. A. Fisher, M.D., F.A.C.S., Professor of Opthalmology, Chicago Eye, Ear, Nose and Throat College, etc. 248 illustrations and 48 colored plates. 218 pp. $4.00. W. A. Fisher, publisher, Chicago, 1922.

The author states ophthalmoscopy is generally considered a difficult subject, beyond the reach of the general practitioner. He claims this and fitting of glasses belong to the latter, and the needed skill can be easily acquired. This volume is presented for that purpose. It offers instruction, with illustrations, for many examinations and procedures.

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CONTENTS

Atrophic Pyelonephritis 1
William F. Braasch, M. D., Rochester, Minn.

Suprapubic versus Perineal Prostatectomy.......... 5
Frank Hinman, M. D., San Francisco, Calif.

Principles of Prostatectomy..................... 9
A. E. Rockey, M. D., Portland, Ore.

Backache of Renal Origin....................... 12
Alexander H. Peacock, Seattle, Wash.

Benzyl Benzoate in Cases of Bladder Distension..... 17
W. J. Stater and D. M. Vickers, Boston, Mass.

The Average Patient. A Study of One Thousand Consecutive Histories of Sick People............ 18
Lester J. Palmer, M. D., Seattle, Wash.

Focal Infection From the Dentist's Standpoint...... 21
L. F. Shaw, D. D. S., Pocatello, Ida.

William Harvey and His Discovery.............. 23
Henry Viets, M. D., Boston, Mass.

EDITORIAL

Best Diet for the Diabetic..................... 25
Justice for the Reserve Corps of the U. S. Public Health Service 25
The Public and the Physician.................... 26
Meeting of Pacific Northwest Medical Association at Spokane 26
Pacific Coast Association of Anesthetists.......... 27
New Advertisements 27
Medical Notes 27
Obituaries 29

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Vol. XXI No. 2 February, 1922 $2.00 Per Year.

CONTENTS

Treatment of Brachial Plexus Injuries 33
Alfred Adson, M. D., Rochester, Minn.
Some Newer Tendencies in Therapeutics 39
Arthur D. Hirschfelder, M. D., Minneapolis, Minn.
Health Supervision of School Children 44
C. P. Knight, M. D., Salt Lake City, Utah
The Problems of Modern Diabetic Treatment 47
N. W. Janney, M. D., Los Angeles, Calif.
Unity in the Medical Curriculum 49
Harry Beal Torrey, Ph. D., Portland, Ore.
Some Considerations of Cleft Palate Surgical Technic. 52
Joseph A. Pettit, M. D., Portland, Ore.
Remarks on Urology and Syphilis 55
J. Guy Strohm, M. D., Portland, Ore.

EDITORIAL

Diphtheria to be Abolished 58
Pacific Northwest Medical Association 58
The St. Louis Meeting of the American Medical Association 58
Lowest Infant Mortality 59
New Advertisements 59
Medical Notes 59
Obituaries 61

Entered March 14, 1903, at Post Office, Seattle, Wash. as Second Class Matter, under Act of Congress of March 3, 1879. Acceptance for Mailing at Special Rate of Postage provided for in Section 1103, Act of October 8, 1917, authorized July 31, 1918.

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CONTENTS

ORIGINAL CONTRIBUTIONS

Diaphragmatic Hernia 65
Ben N. Wade, M.D., Portland, Ore.
A Roentgenologic Review of 750 Gastrointestinal Examinations 70
Maurice F. Dwyer, M.D., Seattle, Wn.
Gastric and Duodenal Ulcer........................ 74
A. Aldridge Matthews, M.D., Spokane, Wn.
Medical Treatment of Ulcer of the Stomach and Duodenum 78
Gustave Barr, M.D., Portland, Ore.
New Surgical Drainage of the Gall-Bladder.... 79
T. Catlett Gibson, M.D., Salt Lake City, Utah.
Some Preventable Causes of Adhesions......... 81
Park Weed Willis, M.D., Seattle, Wn.
Report on Medical Legislation in Idaho........ 83
Ernest E. Laubaugh, M.D., Boise, Ida.
What is the Matter with the Practice of Medicine? 85
Warner M. Karshner, M.D., Puyallup, Wn.

EDITORIAL

Publicity for Public Health Problems.......... 88
The Medical Court Martial of Dr. N. E. Wayson 88
Interesting If True.............................. 89
Notable Heart Lectures 90

Entered Mar. 14, 1903, at Post Office, Seattle, Wn., as Second Class Matter, under Act of Congress of Mar. 9, 1879
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Vol. XXI. No. 4 April, 1922 $2.00 Per Year.

CONTENTS

ORIGINAL CONTRIBUTIONS

The Pathology, Diagnosis and Surgical Treatment of Goiter 97
Emil Goetsch, M.D., Brooklyn, N.Y.
Technic of Operation for Goiter to Improve Postoperative Cosmetics 104
John Hunt, M.D., Seattle, Wash.
The Value to the Surgeon of the Basal Metabolic Rate in Toxic Goiter 108
J. Earl Else, M.D., Portland, Ore.
Notes on a Year in Europe 116
Ray W. Matson, M.D., Portland, Ore.
Preparation of the Cancer Patient for Operation 122
D. T. Quigley, M.D., Omaha, Neb.

EDITORIAL

The Physician and the Optometrist 124
The University of Washington Extension Course 124
Pacific Northwest Medical Association 125
The Sir Thomas Lewis Lectures 126

Entered Mar. 14, 1903, at Post Office, Seattle, Wn., as Second Class Matter, under Act of Congress of Mar. 9, 1879
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CONTENTS

ORIGINAL CONTRIBUTIONS

Modification of the Indications for Operative Interference in Gynecology Imposed by Present Day Radium Therapy.................. 131
Roland E. Skeel, M.D., Los Angeles, Calif.

The Roentgen Rays as an Aid in the Diagnosis of Diseases of the Mastoids and Nasal Sinuses 136
Joseph Aspray, M.D., Spokane, Wash.

Report of Radium Cases of Head and Neck.... 140
Arthur C. Jones, M.D., Boise, Ida.

Indications and Contraindications for Tonsillectomy from an Internist's Point of View..... 143
Kenelm Winslow, M.D., Seattle, Wash.

Teeth and Tonsils as a Source of Disease..... 146
Frank St. Sure, M.D., Colfax, Wash.

Dental Infections from a Medical Point of View 150
Charles H. Sprague, M.D., Pocatello, Ida.

The Pupil in Health and Disease.............. 154
Harry Vanderbilt Wurdemann, M.D., Seattle, Wash.

EDITORIAL

Bunk in Medical Practice 157
The Vanishing Family Doctor................. 157
Lethargic Encephalitis Statistics 158
Graduate Medical Lectures 158

Entered Mar. 14, 1903, at Post Office, Seattle, Wn., as Second Class Matter, under Act of Congress of Măr. 9, 1879
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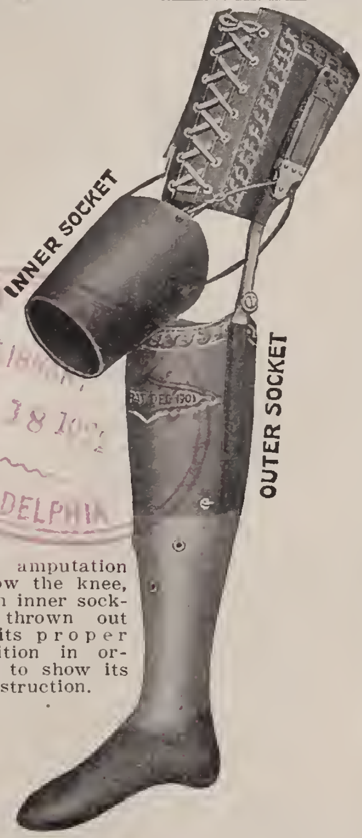

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Vol. XXI. No. 6 June, 1922 $2.00 Per Year.

CONTENTS

ORIGINAL CONTRIBUTIONS

Cesarian Section in the Treatment of Eclampsia with Report of One Post-Mortem Delivery.. 165
H. E. Wheeler, M.D., F.A.C.S., Spokane, Wn.

A Preliminary Report on the Surgical Prevention of Sterility Due to Salpingitis.......... 168
Edward F. Ziegelman, M.D., Portland, Ore.

Cosmetic Surgery of the Face, Neck and Breast 170
F. A. Booth, M.D., Seattle, Wn.

Barium Meal Study in Gall Bladder Diagnosis.. 172
Lincoln Kallen, M.D., Medford, Ore.

A Brief Analysis of the Cases Handled by the Salt Lake City Office of The United States Public Health During the Past Year........ 179
B. W. Black, M.D., Salt Lake City, Utah

Antiseptic Dye Treatment of Gonorrhea in the Female with Experimental Studies........... 182
Ray Jones, M.D., Seattle, Wn.

Diagnostic Problems in Pulmonary Tuberculosis 185
Ralph C. Matson, M.D., Portland, Ore.

Painless Labor 189
C. A. Smith, M.D., Seattle, Wn.

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CONTENTS

ORIGINAL CONTRIBUTIONS

RENAL FUNCTION TESTS 220
Leonard G. Rowntree, M.D., Mayo Foundation, Rochester, Minnesota.
Diagnostic Problems in Pulmonary Tuberculosis 199
Ralph C. Matson, M.D., Portland, Ore.
Fractures and Dislocations of the Spine With The Report of Five Cases.................. 206
H. S. Willard, M.D., Tacoma, Wash.
Dislocated Cervical Vertebrae 212
Roger Anderson, Tacoma Clinic, Wash.
Dislocation of the Knee 213
L. H. Meadows, M.D., Clear Lake, Wash.
Congenital Absence of Both Tibiae 214
Russell T. Congdon, M.D., F.A.C.S., Wenatchee, Wash.
Subphrenic Abscess 217
Joseph D. Sternberg, M.D., and Willis H. Watson, M.D., Portland, Ore.
Treatment of Postoperative Comlications...... 221
N. A. Johanson, M.D., F.A.C.S., Seattle

EDITORIALS

The Nature of Fever 225

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Vol. XXI. No. 8 August, 1922 $2.00 Per Year.

CONTENTS

ORIGINAL CONTRIBUTIONS

Myomectomy for Myomas of the Uterus.......235
William J. Mayo, M.D., Rochester, Minn.

Myxomatous Degeneration of Myofibroma of Uterus.......239
Paul Rockey, M.D., Portland, Ore.

X-Ray Versus Surgery in the Treatment of Fibroid Tumors of the Uterus.......241
Joseph L. Lane, M.D., Seattle, Wash.

Intrameningeal Hemorrhage of the New-Born..243
E. J. Barnett, M.D., Spokane, Wash.

Infectious Diarrhea in Children.......247
E. D. Carder, M.D., Vancouver, B.C.

Diseases of the Hip Joint in Children.......250
J. E. Tyree, M.D., Salt Lake City, Utah

Primary Carcinoma of the Liver.......253
Torlief Torland, M.D., Seattle, Wash.

Heterogeneous Testicular Grafting in Man With Histologic Proof of the Taking of the Graft.256
Max Thorek, M.D., Chicago, Ill.

Neuropathic Dilatation of the Colon with Hypertrophy.......258
Kenelm Winslow, M.D., Seattle, Wash.

Multiple Areas of Penetrating Colitis.......259
J. F. Scott, M.D., Yakima, Wash.

American Red Cross Child Welfare Program in Poland.......260
John B. Manning, M.D., Seattle, Wash.

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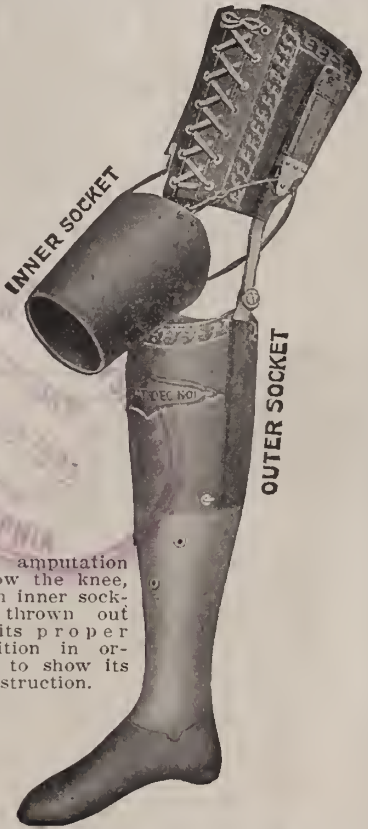

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Vol. XXI. No. 9 September, 1922 $2.00 Per Year.

CONTENTS

EDITORIAL

Pacific Northwest Medical Association Number 271
New Advertisements 271

ORIGINAL CONTRIBUTIONS

Certain Phases of the Chronic Nephritis Problem 272
Henry A. Christian, M.D., Boston, Mass.
Cancer of the Mouth 280
Joseph C. Bloodgood, M.D., Baltimore, Md.
The Present Status of Local and Sacral Anesthesia in Anorectal Diseases..........282
Louis J. Hirschman, M.D., Detroit, Mich.
Nervous Control of the Thyroid Gland........289
Walter B. Cannon, M.D., Boston, Mass.
Arthritis 295
Frank Billings, M.D., Chicago, Ill.
High Voltage X-Ray Therapy 298
Robert H. Millwee, M.D., Dallas, Tex.
Pernicious Anemia, Alkaptonuia, Hemolytic Jaundice, Orthostatic Albuminuria 301
Henry A. Christian, M.D., Boston, Mass.
Tumors of Bone 308
J. C. Bloodgood, M.D., Baltimore. Md.
Surgery as a Therapeutic Agent in the Treatment of Neurologic Lesions...............312
Alfred W. Adson, M.D., Rochester, Minn.

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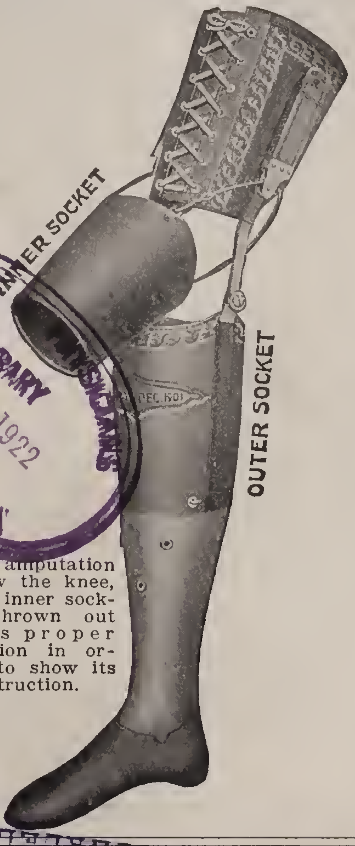

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Vol. XXI. No. 10 October, 1922 $2.00 Per Year.

CONTENTS

ADDRESS

General Septic Peritonitis and Its Treatment 361
A. C. Behle, M.D., Salt Lake City, Utah

ORIGINAL CONTRIBUTIONS

Epidermophyton Infection of the Skin........ 366
John Butler, M.D., Minneapolis, Minn.
The Abdominal Signs and Symptoms of Thoracic Disease 371
Harlow Brooks, M.D., New York City
Traumatic Neurosis 375
George A. Cathey, M.D., Portland, Ore.
Only One Medical Profession.................. 377
A. H. Sawins, M.D., Spokane, Wash.
Medical Problems and Foreign Trade......... 379
R. E. Logsdon, Portland, Ore.

EDITORIAL

A Satisfactory Medical Meeting.............. 381
Physicians Enter Politics..................... 381
Oregon Association Meeting................ 382
Medical Notes 383
Obituaries 384

(Continued on Page 4)

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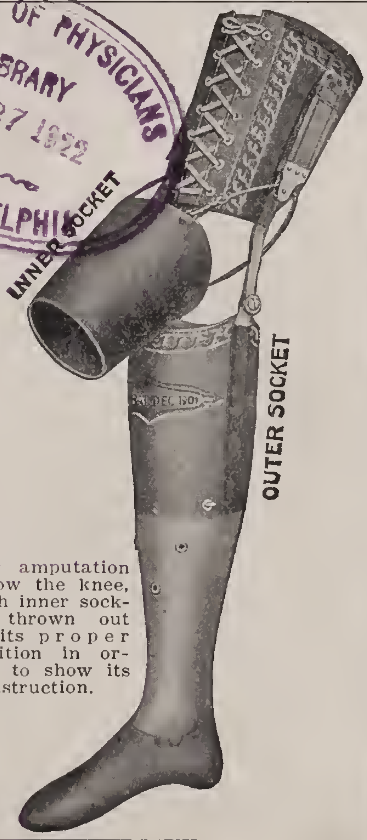

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Vol. XXI. No. 11 November, 1922 $2.00 Per Year.

CONTENTS

ORIGINAL CONTRIBUTIONS

Orthostatic or Intermittent Albuminuria and the Incident of Sagging Kidneys in Young Adults 393
Alexander Hamilton Peacock, M.D., Seattle

Alkaptonuria 397
George H. Anderson, M.D., Spokane, Wn.

Extrarenal and Ureteral Pathology Causing Renal Symptoms in the Presence of a Negative Urine 399
R. F. Hain, M.D., Seattle, Wn.

EDITORIAL

The Diagnosis of Surgical Kidney 401
W. H. Budge, M.D., Logan, Utah

Tuberculosis of the Ileocecal Region with Special Reference to the Cecum 406
C. Stuart Menzies, M.D., Portland, Ore.

EDITORIAL

Epinephrin and Muscular Exercise 410
Infant Mortality Rate 411
Cancer Week 411

(Continued on Page 4)

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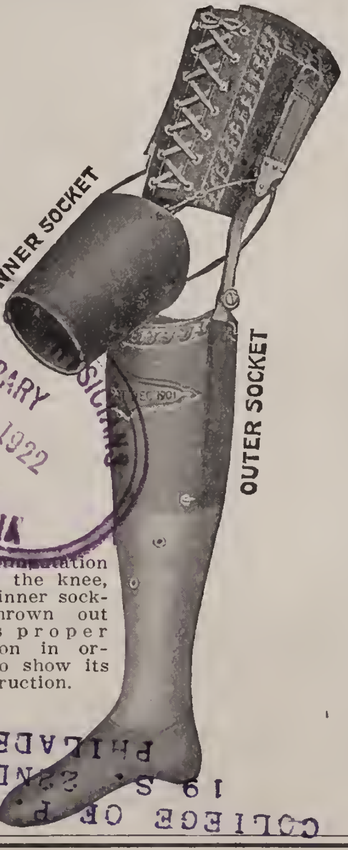

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CONTENTS

ORIGINAL CONTRIBUTIONS

Graded Thorocoplasty in Chronic Pulmonary Suppuration with Special Reference to Diffuse Bronchiectasis 423
Carl A. Hedblom, M.D., Rochester, Minn.
Personal Experience with Artificial Pneumothorax 429
George B. Kalb, M.D., Monrovia, Calif.
The Relationship Between the Clinical Laboratory and the Physician 435
Thomas A. Flood, M.D., Salt Lake City, Utah

EDITORIAL

Financing the State Association 438
Legislation by Election 438
Abolish Smallpox Quarantine 439
Lectures on Endicronology 439
Infectious Jaundice 440
Medical Notes 440
Obituaries 440

(Continued on Page 4)

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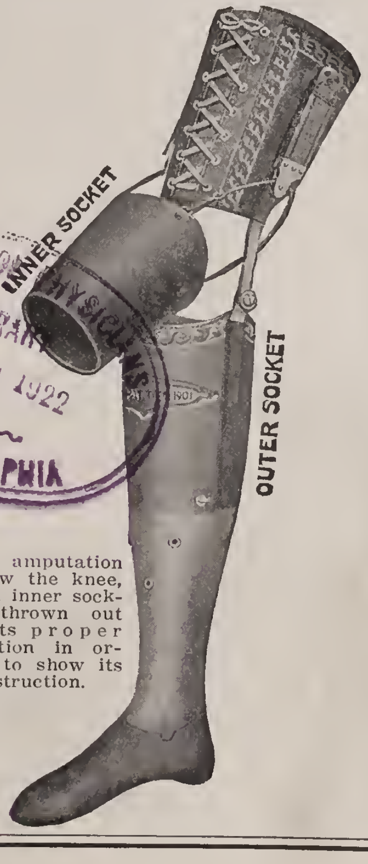

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